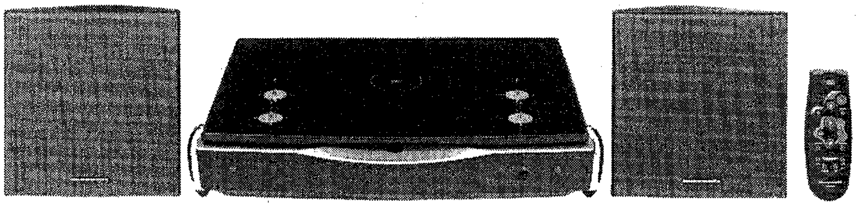
Service Manual

74 MR2020 /2G (Layla)
MR2020 F,K,KK,U
CD/Tuner System



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LS2021 (Speaker System)

1 EXPLODED VIEW AND PARTS LIST 1-1

CAUTION

The System MR2020 (Layla) combines MR2021 (CD/Tuner Amplifier) with LS2021 (Speaker System).

注意

MR2020 は MR2021(CD/Tuner Amplifier) と LS2021(Speaker System) を組み合わせたセット名称です。

Please use this service manual with referring to the user guide (D.F.U.) without fail.
修理の際は、必ず取扱説明書を準備し操作方法を確認の上作業を行ってください。

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system MR2020 / Layla

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SHOCK, FIRE HAZARD SERVICE TEST :

CAUTION : After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard No. 1492.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

1. TECHNICAL SPECIFICATIONS

FM Tuner

Frequency range	87.5 ~ 108.0 MHz
F only	76.0~ 90.0 MHz
Sensitivity	21.2 dBf / 3.2 µV
S/N (Mono/Stereo)	75 / 43 dB
F only	70 / 50 dB
THD (Mono/Stereo)	1.5 / 1.5 %

MW Tuner

Frequency range	531 ~ 1602 kHz
U only	530 ~ 1700 kHz
Sensitivity	500 µV / m
/2, F only	400 µV / m
S/N	50 dB

LW Tuner [/2 only]

Frequency range	153 ~ 279 kHz
Sensitivity	1800 µV / m

Amplifier

Music power	25 W + 25 W (4Ω)
Input sensitivity (AUX)	310 mV / 47 kΩ
S/N (AUX)	85 dB

CD Player

Channels	2 channels
Frequency response	20 ~ 20,000 Hz ± 3 dB
S/N	82 dB (1000 Hz)
THD	0.04 % (1000 Hz)
Output level	2 V RMS

General

Power supply	
/2 version	AC 230 V, 50 Hz
F version	AC 100 V, 50Hz / 60 Hz
K version	AC 110V / 220 V, 50Hz / 60 Hz
KK version	AC 220 V, 60 Hz
U version	AC 120 V, 60 Hz
Power consumption	25 W
Power failure backup time	APPROX. 15 min.
Dimensions	450(W) x 104(H) x 308(D) mm
Weight	5.8 kg

Table top Speaker LS2021

Speaker	
Mid-bass	4"
Dome tweeter.	3/4"
Input power	
Rated	25 W (6Ω)
Max.	40 W (6Ω)
Frequency response	80 ~ 20,000 Hz ± 6 dB
Dimensions	190(W) x 200(H) x 100(D) mm
Weight	1.5 kg

Design and specifications are subject to change without notice.

2-1. HOW TO DISASSEMBLE

1. Take the bottom case (001G) apart

(1) Turn MR2021 upside down with the jig (Parts No.*MR2021JIG). Take care that the top panel will not damaged, especially 4 levers (Refer to fig.1, fig.2 and fig.3). If you don't have the jig, you prepare to put some magazine or telephone guide under the MR2021 (The height is over 3cm books).

2-1. 分解方法

1. ボトムケース(001G)の外し方

(1) MR2021専用治具(Part No.*MR2021JIG)を使用し、セットを裏返しにします(図1～3)。もし、専用治具がない場合は、厚さ3cm以上の雑誌や電話帳を置き、それをセットのレバーがまたぐように、セットを裏返しに置きます。このとき、トップパネル面を傷つけないように、ミラーマットや布等を間にはさんでください。

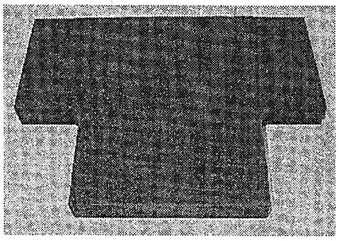


Fig.1 A jig for MR2021

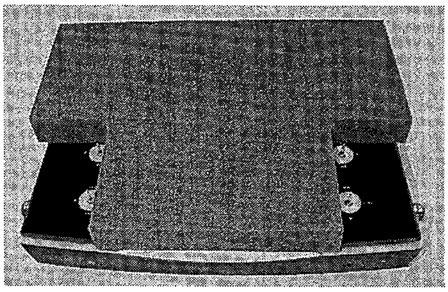


Fig.2 The jig on MR2021

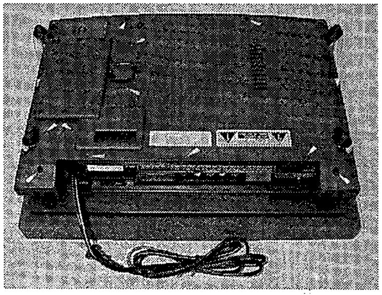


Fig.3 Turning over the MR2021 with the jig

(2) Remove 15 screws as shown in fig.4.

(2) 下図4に示す15本のネジを外します。

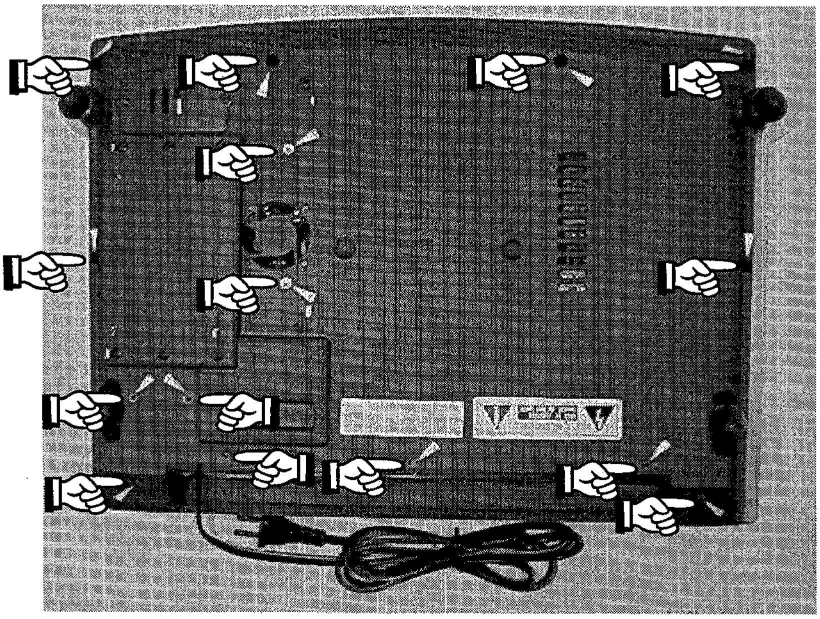


Fig.4 Position of 15 screws

(3) While lifting the bottom case, remove the rear panel as shown in fig.5 and fig.6.

(3) 下図5の様にボトムケースを持ち上げ、リアパネルを外します(図6)。

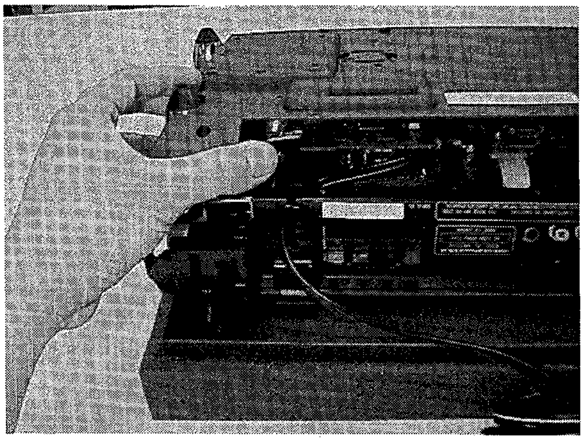


Fig.5 Lifting the bottom case

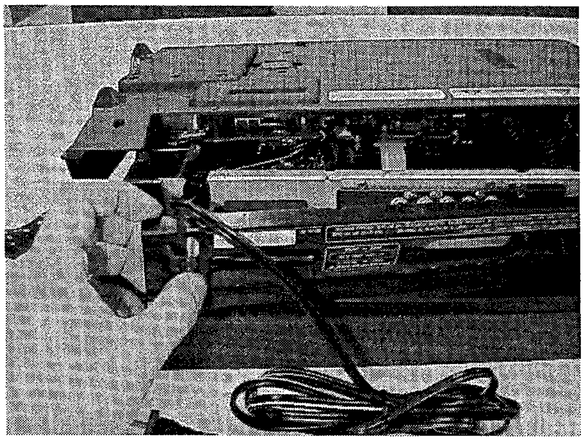


Fig.6 Removing the rear panel

(4) Remove the mains code bush as shown in fig.7.

(4) ACコードブッシュを外します(図7)。

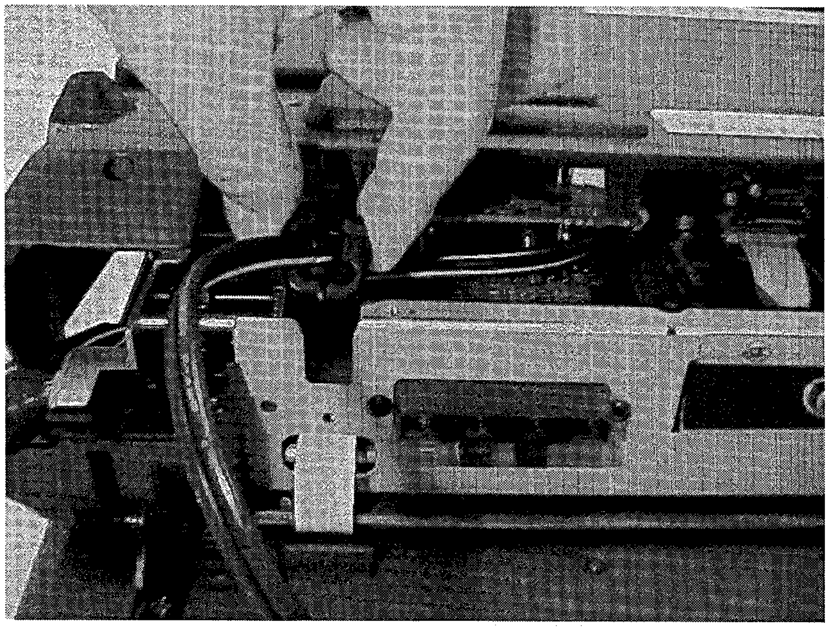


Fig.7 Removing the mains code bush

(5) Lift up the bottom case, put the one with turning to front side (Refer to fig.8).

(5) ボトムケースを持ち上げ、フロント側に反転させながら置きます(図８)。これで、ボトムケースが外せました。

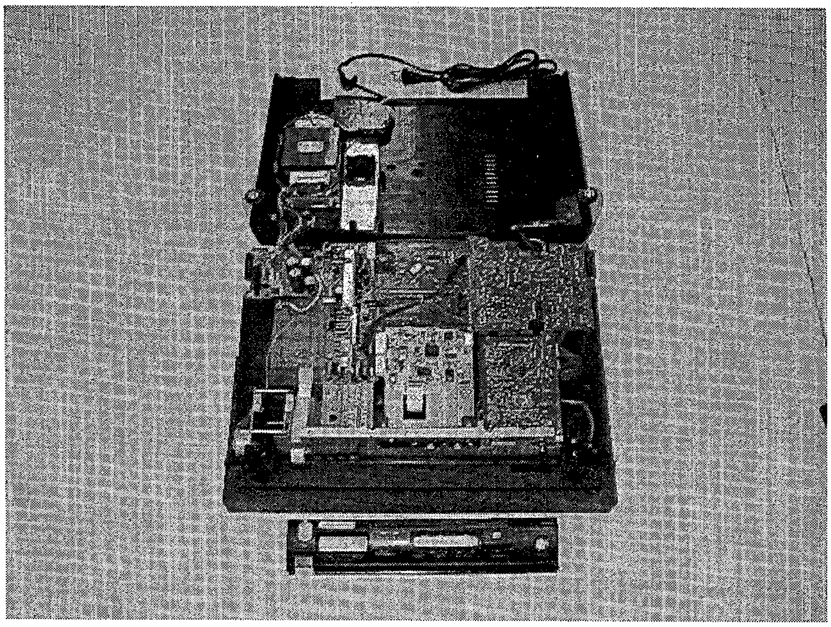


Fig.8 Taking the bottom case apart

Remark for reassemble

When you fit the bottom case, remove the lid of the bottom case (Refer to fig.9) and confirm the arrangement of lead wires for transformer (Refer to fig.10).

組立時の注意

組立の際は、ボトムケース底面の蓋（図９）を開け、トランスのリード線がきちんと整形されているか確認して下さい（図１０）。

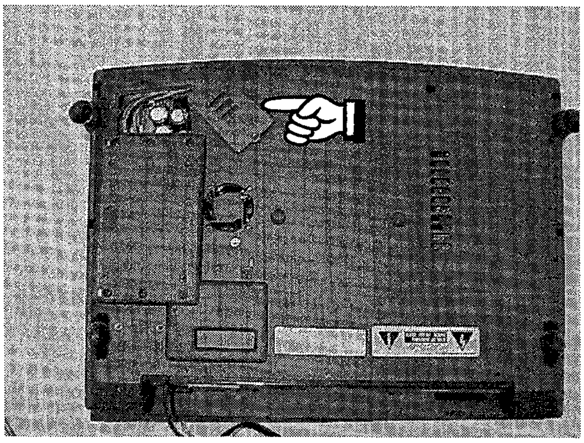


Fig.9 Removing the lid of the bottom case

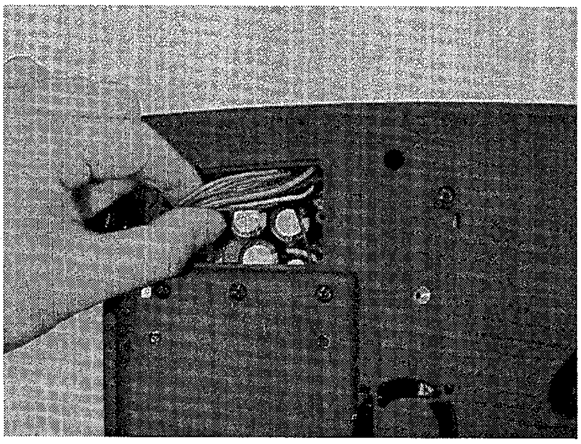


Fig.10 Arrangement of lead wires

2. Take the top panel (001D) apart

(1) Turn MR2021 upside down with the jig (Parts No.*MR2021JIG). Take care that the top panel will not damaged, especially 4 levers (Refer to fig.1, fig.2 and fig.3). If you don't have the jig, you prepare to put some magazine or telephone guide under the MR2021 (The height is over 3cm books).

(2) Push the rear panel while holding the top panel (see fig.11 below). The top panel will move approx. 5mm (fig.12 and fig.13). Now, 4 screws on the top panel will become accessible (fig.14). Remove these screws (M3 type screw).

2. トップパネル(001D)の外し方

(1) MR2021専用治具(Part No.*MR2021JIG)を使用し、セットを裏返しにします(図1～3)。もし、専用治具がない場合は、厚さ3cm以上の雑誌や電話帳を置き、それをセットのレバーがまたぐように、セットを裏返しに置きます。このとき、トップパネル面を傷つけないように、ミラーマットや布等を間にはさんでください。

(2) 次に、トップパネルを押さえながら、リヤパネルをフロント側に押すと、5mmほど動き、M3皿ネジ4本見えてきますので、これを外して下さい(図11～14)。

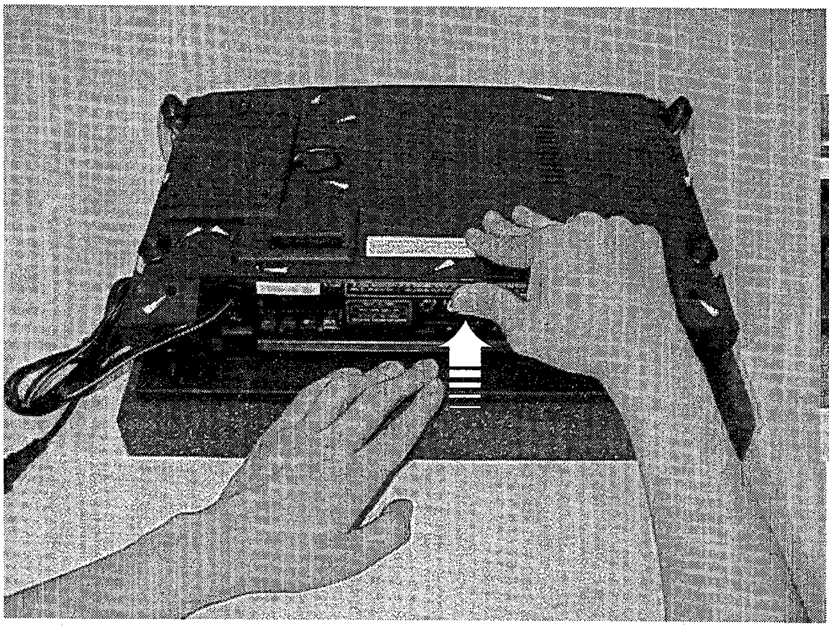


Fig.11 Pushing the rear panel

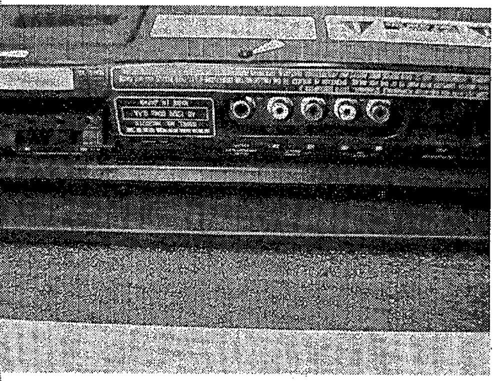


Fig.12 Before pushing the rear panel

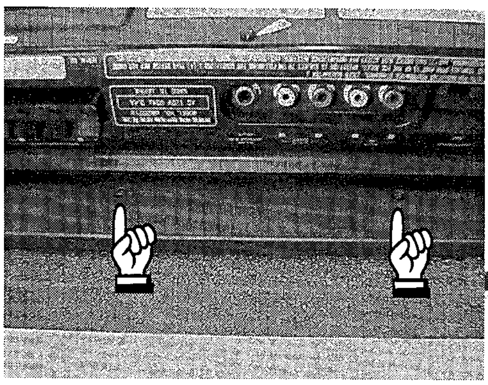


Fig.13 Pushed the rear panel

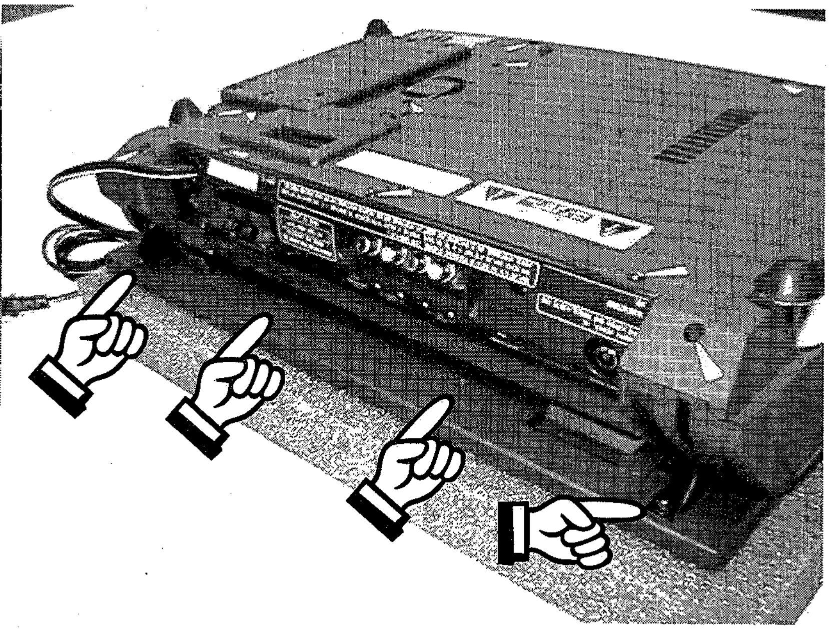


Fig.14 Positions of 4 screws

(3) Turn the MR2021 to normal operating position.
(4) Open the top panel of MR2021 by hand.
(5) Remove 2 screws (M2 type screw) on the top (see fig.15).

(3) 裏返っていたセットを、元に戻します。
(4) トップパネルを持ち上げ開きます。
(5) トップパネルの手前裏側のM2皿ネジ２本をはずします（図15)。

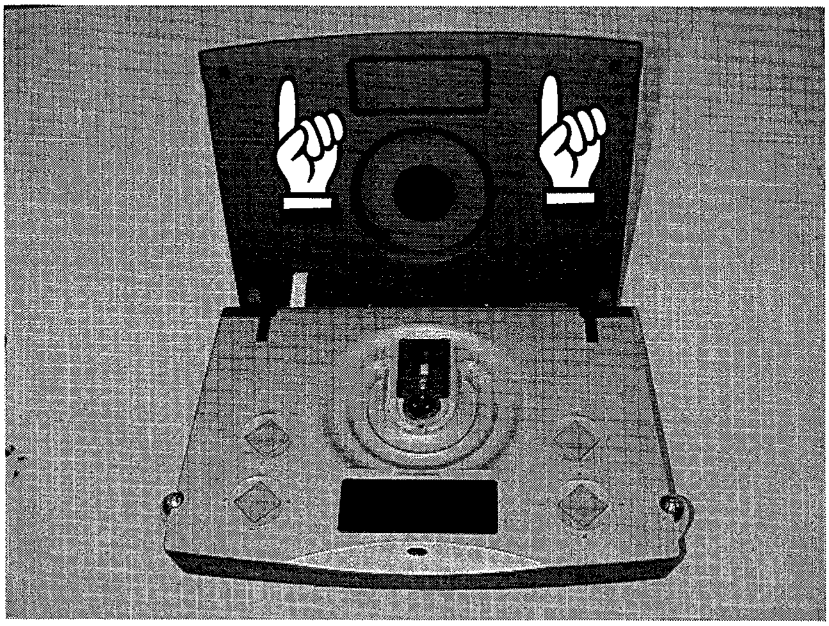


Fig.15 Positions of 2 screws on the top

(6) The upper part and lower part of the top panel are connected to each other with adhesive tapes. Separate these parts by pushing the transparent upper part in the middle (on CD shaped part) from the lower part, while holding the lower part.
(7) The upper part and lower part of the top panel were separated (See fig.16 and fig.17).

(6) これでトップパネル（アクリルウインドウ）が外れる状態です。ただし、固定補助のための両面テープが付いていますので、トップパネル裏側中央の丸穴より、アクリルウインドウを押し上げるようにして、取り外してください。
(7) トップパネル（アクリルウインドウ）が外れた状態が下の図です(図 16, 図 17)。

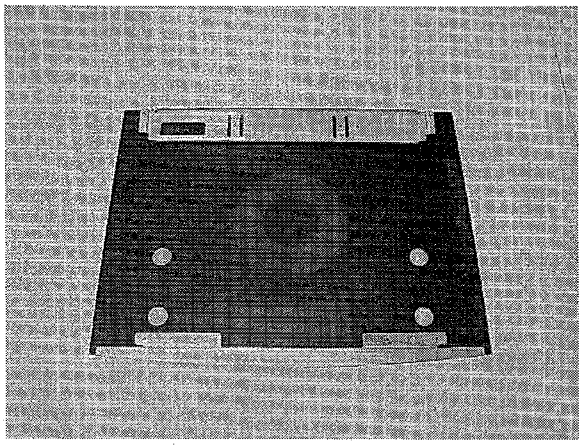


Fig.16 The upper part of the top panel (the reverse side)

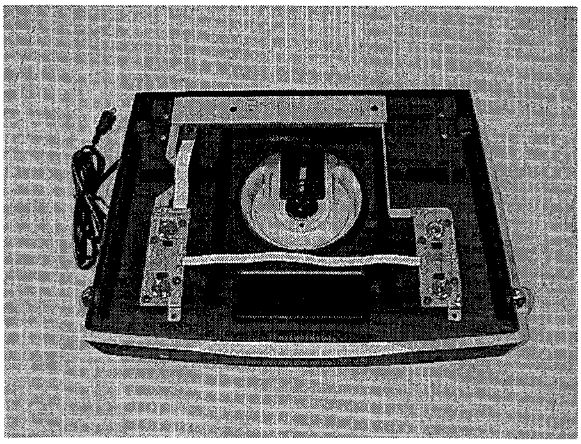


Fig.17 The lower part of the top panel and the others

2-2. REPAIR INTRODUCTION

PREPARATION FOR CD BLOCK

1. Set a disc for repair into product.
2. Turn the product upside down on the jig (Parts No.*MR2021JIG). Take care that the top panel will not damaged, especially 4 levers. (Refer to "How to disassemble ")
3. For the top panel will not open while repairing, remove the connecting wires of panel motor from the connector (J812).
4. Repair and operate it on the upside down position of the product.

PREPARATION FOR MAIN AMPLIFIER PCB (P704)

1. Main amplifier is BTL output.
2. For removing the main amplifier PCB (P704) from the product, remove the wire (W802) from the terminal (WU02) of microprocessor PCB (PU04). Connect another wire with the terminal (WU02) and GND as chassis instead of the wire (W802).

REMARK

Remove the bottom case from the product, Do not output signals of over 1W from both channels more than 10 minutes continuously.

2-3. EXPLANATION OF CIRCUITS

FAN OPERATION

The voltage added to the diode (D852) is depended on the resistance of the thermistor (R857) and resistors (R855,R858). When the temperature of the heat sink goes up, the resistance of the thermistor (R857) decreases, and the voltage added to the diode (D852) increases.

1. When the temperature of the heat sink is over 70 degrees Celsius, then D852 is on, through R852, Q851 is on, and the fan starts to revolve.
2. When the temperature of the heat sink is approx. 100 degrees Celsius or more, through R853, Q853 is on, and the product is STAND-BY status. But, if the fan revolve normally, the temperature of the heat sink will not be over 100 degrees Celsius and not be STAND-BY status. Therefore, the procedure of the over heat protection circuit check is as follows;

(1) Connect the test point (J814) with a resistor of 680 ohm.
(2) If the product is STAND-BY status, this circuit is normal.
(3) Remove the resistor of 680 ohm from the test point (J814).

FAN OPERATION CHECK

Keep outputting 2.5W from both channels of the product.

2-2. 修理における注意点

CDブロックの修理は次のように行って下さい。

1. 修理作業に必要なDISCを本体にセットします。
2. 本体の上面（トップパネル）を下にして設置します。(要専用冶具 Part No.*MR2021JIG、ボトムケースの外し方を参照。)
3. 修理中にトップパネルが不用意に開かないように、パネルモーターのリード線をJ812から外して下さい。
4. 上下逆の状態で、DISCを再生して修理作業を行って下さい。

メインアンプ基板(P704)の修理について

1. パワーアンプはBTL出力になっています。
2. メインアンプ基板(P704)をセットから分離するために、W802のリード線をマイコン基板(PU04)の端子WU02から外し、W802の代替として端子WU02とシャーシなどに別途リード線を接続して下さい。

注意

底蓋（ボトムケース）を分離した状態ではFANの効果がありません。両チャンネル1Wを超える出力を連続して（10分以上）出力しないで下さい。

2-3. 回路説明

FAN OPERATION

D852に印加される電圧はサーミスタ(R857)とR855とR858のそれぞれの抵抗値で決まります。ヒートシンクの温度が上昇すると、サーミスタ(R857)の抵抗値が下がり、D852に印加される電圧は上がります。

1. ヒートシンクの温度が約70℃を超えると、D852がONし、R852を通って、Q851が導通を開始し、FANが回転を始めます。また、ヒートシンクの温度が約70℃以上において、D852のアノード電圧は、ヒートシンクに比例して上昇し、それにつれてFANの回転数も上昇します。
2. ヒートシンクの温度が約100℃（オーバーヒート）になると、R853を通って、Q853がONし、本体はスタンバイになります。ただし、FANが正常に動作していれば、フルパワーでもヒートシンクの温度が100℃を超えることは無く、スタンバイにはなりません。

従って、オーバーヒート・プロテクション回路動作チェックは次のように行います。

(1) テストポイント（J814）に680Ωの抵抗を接続します。
(2) 本体がスタンバイになれば、回路は正常に動作しています。
(3) テストポイント（J814）から抵抗を外します。

FAN OPERATION CHECK

底蓋（ボトムケース）を分離してない状態では、両チャンネルに2.5Wの出力を加えて10分以内にFANが回転すれば、回路は正常に動作しています。

When the bottom case is closing. If the fan revolving starts within 10 minutes, the function is correct working.

Otherwise keep outputting 1W from both channels of the product when the bottom case is opening. If the fan revolving starts within 5 minutes, the function is correct working.

REMARK

Do not output over 1W when the bottom case is open.

VCC CONTROL

The regulation of primary voltage is not so higher intentionally for decreasing the no-load loss. Therefore, this circuit is used for the product to keep the voltage tolerance of the power IC. This circuit do not work when the output is from 0 to approx. 1Vrms. Then VCC is supplied from D709 only. When the output is more than 1Vrms, through D701-D704, R722, D706, and Q703 is on, current is supplied from Q702. When the output is over approx. 3Vrms, D709 is off, and VCC is supplied from Q702 only.

SPEAKER PROTECTION

1. When either terminal of BTL outputs connect with GND (chassis) by mistake, the speaker protection circuit will work as follows. through R707-R710, Q704 or Q705 is on, and Q706 is on. Then #5Pin for Q701 is 0V, power IC (Q701) will be in power off. Therefore, the product will be STAND-BY status.
2. When the VCC CONTROL circuit is working correctly, maximum current of R825 is 1A, and voltage between R825 load is maximum 0.33V. When both terminals of BTL outputs are shorted on outputting over 0.25W, R825 is supplied over 2A, Q807 and Q803 is on, and the product will be STAND-BY status.

CD 5V ON/OFF CONTROL

The voltage for CD (CD 5V) is supplied from QX04 when the following conditions are satisfied fully. (for noise and laser protection)

1. Setting a disc on the product, and QU08 is on.
2. Closing top panel, and #78Pin for QU10 is 0V.
3. The product is in CD mode.

MUTE CONTROL

Mute signals output from microprocessor (QU10) are "MUTE (Pin No.37)", "MUTE2 (Pin No.7)", and "DSC MUTE (Pin No.5)".

Fig.1 is workable output terminals by each mute signals, Fig.2 is the status of each mute.

また、底蓋（ボトムケース）を分離した状態では、両チャンネルに1Wの出力を加えて5分以内にFANが回転すれば、回路は正常に動作しています。

注意

この状態ではパワーICの放熱が十分ではないので、1Wを超える出力を加えないで下さい。

VCC CONTROL

MR2020のトランスは無負荷損失を極力少なくする為に、1次側のレギュレーションを故意に下げています。このためにパワーICの定格電圧をオーバーしないようにこの回路が使われています。

無信号から出力1Vrms位まではこの回路は動作せず、VCCはD709からのみ供給されます。約1Vrmsを超えると、D701-D704, R722, D706を通って、Q703が導通を開始しQ702からも電流が供給されます。

約3VrmsをこえるとD709はOFFとなり、VCCはQ702からのみ供給されます。

SPEAKER PROTECTION

1. BTL出力の片側が誤ってGNDに接続された場合は、次のようにスピーカープロテクション回路が働きます。R707-R710を通ってQ704又はQ705がONとなり、Q706がONします。次にQ701の#5PINが0Vになり、パワーIC（Q701）内部の電源をOFFにします。よって、本体はスタンバイになります。
2. VCC CONTROL回路が正常に動作していれば、通常R825に流れる電流は最大1Aで、R825の両端電圧は最大、0.33Vです。0.25W以上の出力中にBTL出力の両端をショートすると、R825に2A以上の電流が流れQ807, Q803が直ちにONとなりスタンバイになります。

CD 5V ON/OFF CONTROL

CD 5VはTUNERへのノイズ妨害と、LASER出力の外部への漏れを防止する為に次の条件が揃った時にQX04を通して供給されます。

1. DISCがセットされ、QU08がON。
2. PANELがCLOSEし、QU10の#78PINが0V。
3. FUNCTIONがCD。

MUTE CONTROL

マイコン（QU10）から出力するMUTE信号は、MUTE（Pin No. 37），MUTE2（Pin No. 7），DSC MUTE（Pin No.5）の3つで、Fig.1が各MUTE信号によりMUTEが働く出力、Fig.2が各MUTEの働く条件を示します。

Fig.1

	Q701(SPK)	QN01-QN04 (PHONE)	QX05,QX06 (SUB WOOFER)	QX07,QX08 (LINE OUT)	QE01
MUTE	YES	YES	YES	NO	NO
MUTE2	NO	NO	NO	YES	NO
DSC MUTE	NO	NO	NO	NO	YES

Fig.2

	POWER ON/OFF	CD MODE STOP OR TRACK JUMP	MUTE BUTTON ON	MODE CHANGE	VOLUME MINIMUM
MUTE	YES	YES	YES	YES	YES
MUTE2	YES	YES	NO	YES	NO
DSC MUTE	NO	YES	NO	NO	NO

TOP PANEL OPEN SENSOR

1. The pulse (T=84msec, Duty 50%) is always added to LED (QU15), from #30Pin of QU10, through RF28 and QU22.
2. Cover the sensor with your fingers, the collector voltage of QU01 goes up over 0.7VP-P. and through RU71 and QU09, the pulse of 5VP-P inputs to #29Pin of QU10. Then the top panel will open.
3. Not needing to cover the sensor with your fingers, QU01 receives the light of LED reflected by lens oneself. Therefore, the collector of QU01 adds the reverse pulse through RF29, QU26 and RF32, for reduced incorrect working. So, the voltage of residual pulse for the collector of QU01 is suppressed to 0.1VP-P.

REMARK

When the sensor receives sunlight or a strong light as incandescent, top panel might open.

POPS NOISE KILLER

RX72, CX70 and QX70 are the circuit to delay power supply for approx. 2 seconds. Therefore, this circuit prevents pops noise generation when power switch is on or off.

SUB WOOFER

Sub woofer output is composed a low pass filter of cut-off frequency 150Hz octave 12dB. It is output 2V for AUX L,R input 60Hz, 200mV (volume is maximum).

REMARK

Sub woofer output level is depended on volume control.

TOP PANEL OPEN SENSOR

1. QU10の#30PINからRF28, QU22を通ってQU15のLEDに、パルス(T=84msec、Duty,50%)が常に印加されています。
2. 指をSENSORのレンズに当てると、QU01のコレクタ電圧が 0.7VP-P 以上となり、RU71, QU09 を通って、QU10の#29PINに5VP-Pのパルスが入力され、トップパネルはオープンします。
3. 指を SENSOR のレンズに当てなくても、LED の光はレンズ自身に反射してQU01に当たってしまいます。そのため、RF29, QU26, RF32を通してQU01のコレクタに逆極性のパルスを印加する事で、誤動作を軽減させています。この結果、通常QU01のコレクタの残留パルス電圧は0.1VP-P程度に抑えられています。

注意

直射日光や白熱電球などの強い光を受けるとトップパネルが開く場合があります。

POPS NOISE KILLER

RX72, CX70, QX70はQH01への電源の供給に約2秒の時定数を持たせ、POWER ON/OFFにおけるポップスノイズの発生を防止する回路です。

SUB WOOFER

SUB WOOFER 出力はカットオフ周波数 150Hz オクターブ 12 dB の low pass filter の構成です。AUX L, R 入力 60Hz , 200mV ボリューム最大で 2V の出力が得られます。

注意

SUB WOOFER OUTPUT LEVEL は VOLUME CONTROL により可変します。

3 SERVICE MODE

1. How to set the service mode

(1) While holding the CLOCK and CLEAR buttons together, put the mains plug to mains outlet.

(2) FL check mode will start.

(3) While in FL check mode, each time the FUNCTION button pressed (within 2 seconds), the mode changes in the following order.
TR FREQ (Tracking point frequency memory mode) ➛
CD TEST (CD test mode) ➛ FL CHK (FL check mode) ➛
TR FREQ (Tracking point frequency memory mode)

2. FL CHECK MODE

FL check mode will continue until changing other mode.

3. TRACKING POINT FREQUENCY MEMORY MODE

This mode is not available for repair (This is for check in factory.). If you set in this mode, some frequencies will register in each preset memory.

REMARK

User programmed frequencies will be deleted.
While in Tracking point frequency memory mode, press the MEMO button. Press the CLEAR and the DISPLAY buttons together. The display shows “CLEAR” 2 seconds. Then all memories will be clear.

4. CD TEST MODE

(1) Press the “+” button, then the sledge move to the outside. Press the “-” button then the sledge move to the inside. Press the CLEAR button while the sledge is moving, then the sledge stop.

(2) Press the MEMO button, then the laser pick up unit is giving out the beam. Press the MEMO button again then the laser pick up unit stop beam out. All operations are available without the Disc.

(3) While in CD test mode, CD play is available in opening the top panel.

(4) If any ERROR is happened, the display shows “CD ERRX”. (X is a ERROR code.) The ERROR message will not be clear until pressing STOP or POWER buttons.

Error Code	Description
1	The sledge switch not turn on.
2	The sledge switch not turn off.
3	The laser pick up unit not focus.
4	The tracking is not fixed.
5	The spindle motor not locked.

5. How to stop the service mode

Press the POWER button. Then product will be in POWER OFF (STAND-BY).

REMARK

The microprocessor will not be clear by this operation.
(Refer to "3. TRACKING POINT FREQUENCY MEMORY MODE")

3 SERVICE MODE

1. SERVICE MODE の設定方法

(1) クロックボタン（左上のレバー下方向）とCLEARボタン（左下のレバー上方向）を押しながら（倒しながら）電源コードを接続します。

(2) FLチェックが始まります。(FL CHECKモード)

(3) FLチェック時、FUNCTIONボタン（右上のレバー左方向）を（2秒以内に）押す（倒す）ごとに、トラッキングポイント周波数メモリーモード(TR FREQ) → CD TESTモード → FL CHECKモードへと切り換わります。

2. FL CHECKモード

他のモードに切り換えない限り、FLチェックを繰り返します。

3. トラッキングポイント周波数メモリーモード

このモードは、工場チェック用のため使用しません。
このモードを設定すると、いくつかの周波数がそれぞれのプリセット番地にメモリーされます。

注意

ユーザーのプリセットデータがある場合にはオーバーライトされます。
このモード時に、MEMOボタンを押してから、CLEARボタンとDISPLAYボタンを同時に押すとメモリーがクリアされます。

4. CD TESTモード

(1) CD STOP時、＋ボタンでスレッジが外周に、－ボタンで内周に移動し、CLEARボタンで停止します。

(2) CD STOP時、MEMOボタンでCDレーザーのON/OFFします。

(3) CD TESTモードの時は、トップパネルが開いた状態でもCD PLAY可能です。

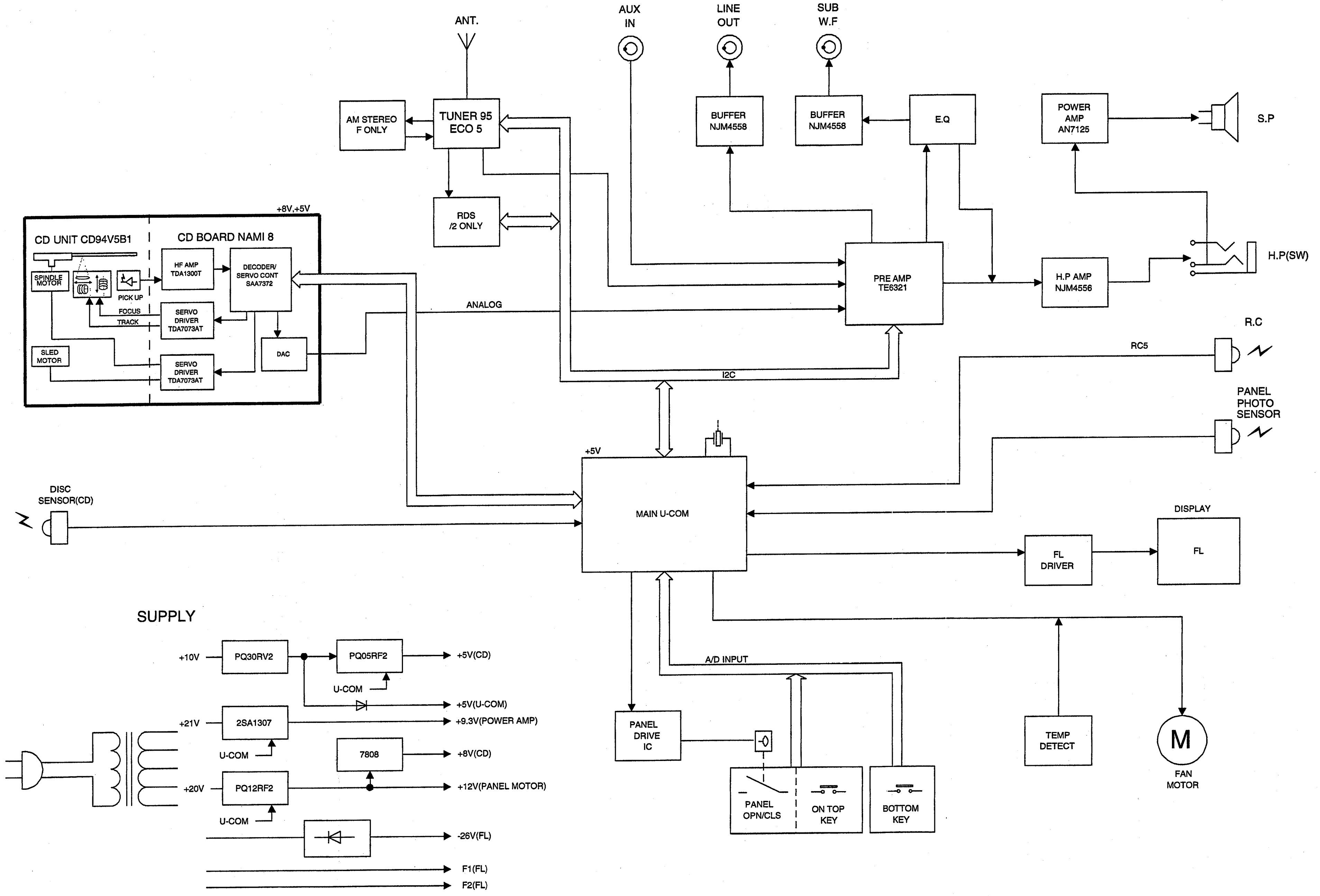
(4) CD TESTモードの時は、CDを動作させた場合に、何らかのERRORがあれば、DISPLAYに「CD ERRX」("X"は下表のエラーコード）と表示します。表示は、STOPまたはPOWERのいずれかのボタンが押されるまで継続されます。

エラーコード	エラーの詳細
1	スレッジのスイッチがONしない
2	スレッジのスイッチがOFFしない
3	フォーカスが合わない
4	トラッキングが合わない
5	スピンドルモーターがロックしない

5. SERVICE MODE の解除方法

POWERボタンを押します。スタンバイになり、以後通常動作になります。
※ メモリーのクリアーはされません。クリアーの方法は「3.トラッキングポイント周波数メモリーモード」を参照して下さい。

4-1 BLOCK DIAGRAM


ANT.
AUX IN
LINE OUT
SUB W.F
AM STEREO F ONLY
TUNER 95 ECO 5
RDS /2 ONLY
BUFFER NJM4558
BUFFER NJM4558
E.Q
POWER AMP AN7125
S.P
H.P(SW)
PRE AMP TE6321
H.P AMP NJM4556
+8V,+5V
CD UNIT CD94V5B1
CD BOARD NAMI 8
SPINDLE MOTOR
PICK UP
FOCUS
TRACK
HF AMP TDA1300T
DECODER/ SERVO CONT SAA7372
SERVO DRIVER TDA7073AT
SERVO DRIVER TDA7073AT
SLED MOTOR
DAC
ANALOG
I2C
R.C
RC5
PANEL PHOTO SENSOR
+5V
DISC SENSOR(CD)
MAIN U-COM
DISPLAY
FL DRIVER
FL
A/D INPUT
PANEL DRIVE IC
PANEL OPN/CLS
ON TOP KEY
BOTTOM KEY
TEMP DETECT
FAN MOTOR
M
SUPPLY
+10V
PQ30RV2
PQ05RF2
+5V(CD)
U-COM
+5V(U-COM)
+21V
2SA1307
+9.3V(POWER AMP)
U-COM
7808
+8V(CD)
+20V
PQ12RF2
+12V(PANEL MOTOR)
U-COM
-26V(FL)
F1(FL)
F2(FL)

4-2 AMステレオ調整手順

調整箇所　：LA01 (PA04 基板)

調整周波数：999kHz　INPUT＝50mV/m

変調条件　：400Hz (L+R)=80% MOD. 25Hz PILOT OFF

1. SGの変調を(L-R)，PILOT OFFにします。
2. セットのLch(又はRch)の出力が最小になるように、LA01を微調整します。

注意：

・他の、コイル又は調整箇所は調整済みですので回さない事。

・調整は、蛍光灯や電源ノイズの無い場所で行ない、必ずテストループアンテナを使うこと。

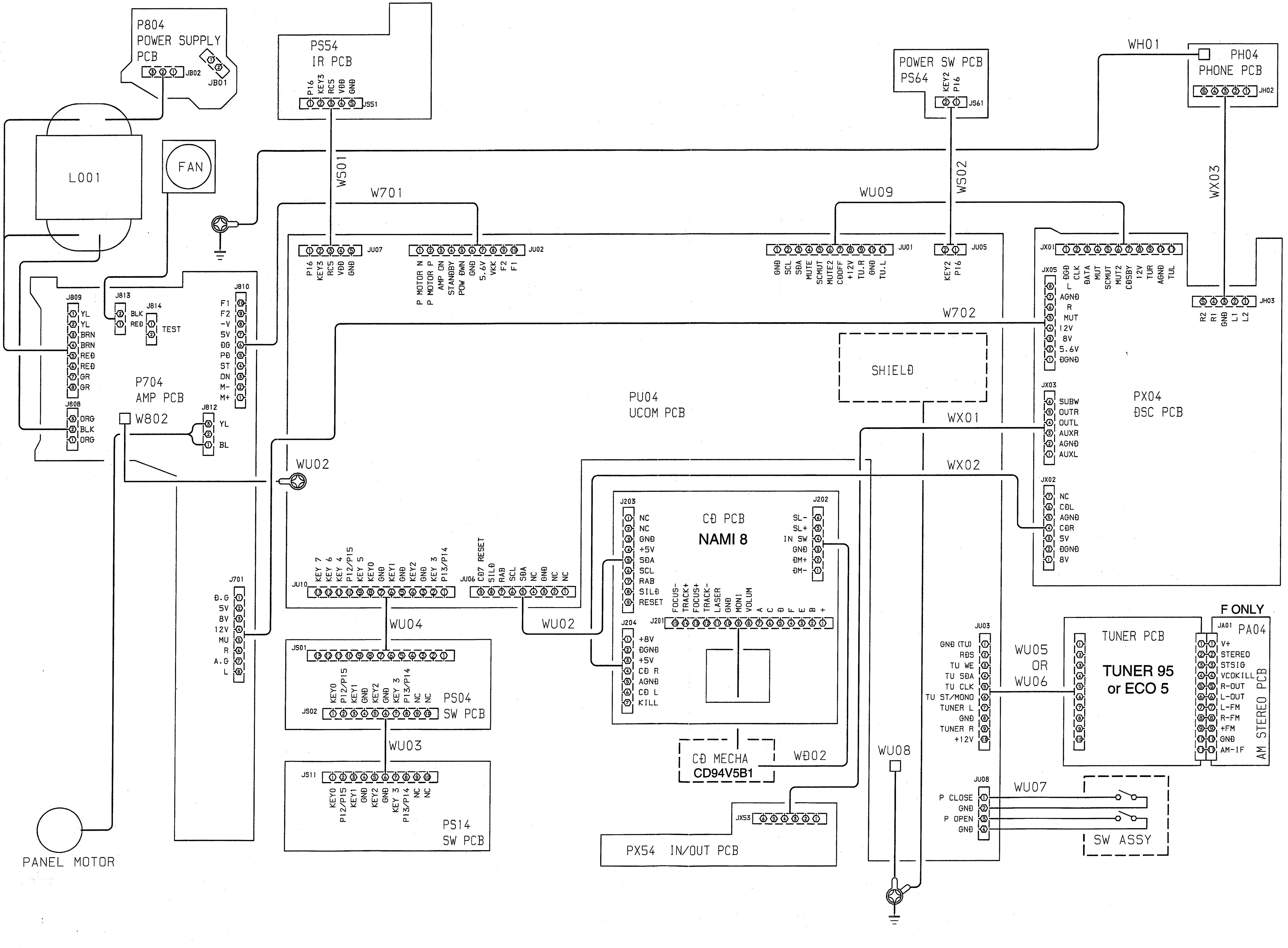
4-3 MICROPROCESSOR DATA

QU01

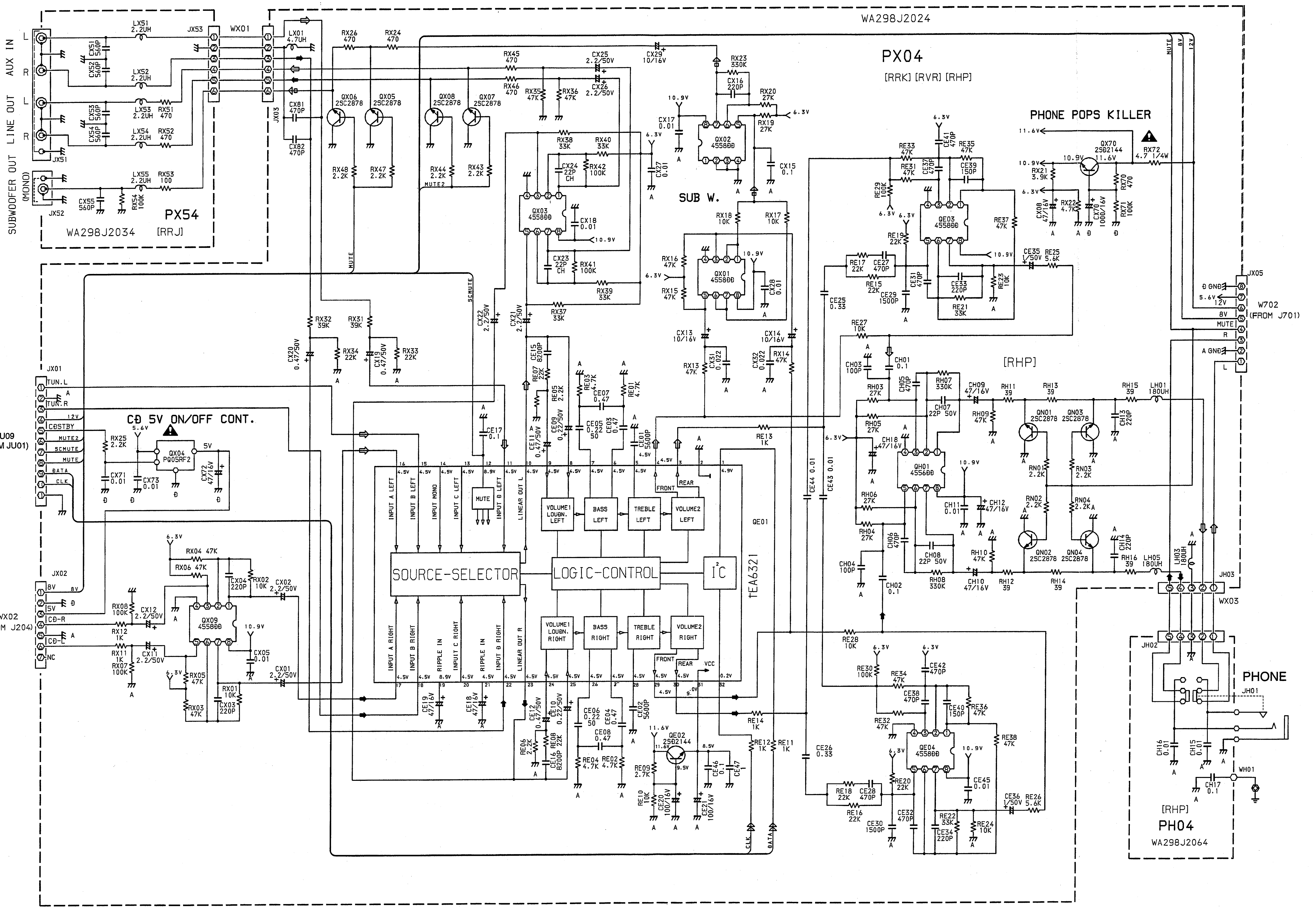
Pin No.	Pin Name	Signal Name	I/O	Active	Slow	Function
1	P10 (INT0)	_POW_DWN	INT	↓	L	POWER DOWN
2	P11 (INT1)	_STANDBY	OUT	L	L	POWER STANDBY
3	P12 (INT2)	SDA	IN/OUT		-	IIC SDA(for RDS,DSC)
4	P13 (DVO)	SCL	OUT	H	L	IIC SCL(for RDS,DSC)
5	P14	DSC_MUTE	OUT	L	L	DSC MUTE
6	P15	_CD_STANDBY	OUT	L	L	CD STANDBY
7	P16	_MUTE2	OUT	L	L	LINE MUTE
8	P17	*	IN	-	-	N.C
9	TEST	-	IN	-	-	GND
10	P21 (XTIN)	32.768kHz	IN	-	-	SUB X-TAL
11	P22 (XTOUT)	32.768kHz	OUT	-	-	SUB X-TAL
12	RESET	_RESET	IN	L	-	RESET
13	XIN	8.0MHz	IN	-	-	X-TAL
14	XOUT	8.0MHz	OUT	-	-	X-TAL
15	VSS	-	GND	-	-	GND
16	P20 (INT5)	_HOLD	IN	L	-	HOLD IN
17	P30 (INT3)	_RCIN	INT	↑	-	RC-5 BUS IN
18	P31	_RCOUT	OUT	L	L	RC-5 BUS OUT
19	P32 (SCK)	TUNE_CLK	OUT	H	L	TUNER CLK
20	P33 (SI)	_TUNE_WE	OUT	L	-	TUNER WRITE ENABLE
21	P34 (SO)	TUNE_SDA	IN/OUT	H	L	TUNER SDA
22	P35 (HSCK)	TUNER_ST_M ON	IN	H	L	TUNER STEREO/MONO
23	P36	CD7_RESET	OUT	L	L	CD7 RESET
24	P37 (HSO)	DISC_IN	IN	H	-	DISC IN SENSOR
25	P00	SILD	OUT	L	L	CD7 CONTROL
26	P01	RAB	OUT	H	L	CD7 CONTROL
27	P02	SCL	OUT	H	L	CD7 CONTROL
28	P03	SDA	IN/OUT	H	L	CD7 CONTROL
29	P04	P_SEN_IN	IN	H	-	PANEL SENSOR IN
30	P05	P_SEN_OUT	OUT	H	L	PANEL SENSOR OUT
31	P06	P_MOTOR_P	OUT	H	L	PANEL MOTOR +
32	P07	P_MOTOR_N	OUT	H	L	PANRL MOTOR -
33	VDD	+5V	+5VS	-	-	VDD
34	P60 (G15)	*	IN	-	-	N.C
35	P61 (G14)	*	IN	-	-	N.C
36	P62 (G13)	AMPON	OUT	H	L	AMP POWER ON
37	P63 (G12)	MUTE	OUT	H	L	MUTE
38	P64 (G11)	_RDS_ON	OUT	H	L	RDS_POWER
39	P65 (G10)	11G	OUT	H	-	DIGIT OUT
40	P66 (G9)	10G	OUT	H	-	DIGIT OUT

Pin No.	Pin Name	Signal Name	I/O	Active	Slow	Function
41	P67 (G8)	9G	OUT	H	-	DIGIT OUT
42	P70 (G7)	8G	OUT	H	-	DIGIT OUT
43	P71 (G6)	7G	OUT	H	-	DIGIT OUT
44	P72 (G5)	6G	OUT	H	-	DIGIT OUT
45	P73 (G4)	5G	OUT	H	-	DIGIT OUT
46	P74 (G3)	4G	OUT	H	-	DIGIT OUT
47	P75 (G2)	3G	OUT	H	-	DIGIT OUT
48	P76 (G1)	2G	OUT	H	-	DIGIT OUT
49	P77 (G0)	1G	OUT	H	-	DIGIT OUT
50	P80 (S0)	P16	OUT	H	-	SEGMENT OUT
51	P81 (S1)	P15	OUT	H	-	SEGMENT OUT
52	P82 (S2)	P14	OUT	H	-	SEGMENT OUT
53	P83 (S3)	P13	OUT	H	-	SEGMENT OUT
54	P84 (S4)	P12	OUT	H	-	SEGMENT OUT
55	P85 (S5)	P11	OUT	H	-	SEGMENT OUT
56	P86 (S6)	P10	OUT	H	-	SEGMENT OUT
57	P87 (S7)	P9	OUT	H	-	SEGMENT OUT
58	P90 (S8)	P8	OUT	H	-	SEGMENT OUT
59	P91 (S9)	P7	OUT	H	-	SEGMENT OUT
60	P92 (S10)	P6	OUT	H	-	SEGMENT OUT
61	P93 (S11)	P5	OUT	H	-	SEGMENT OUT
62	P94 (S12)	P4	OUT	H	-	SEGMENT OUT
63	P95 (S13)	P3	OUT	H	-	SEGMENT OUT
64	P96 (S14)	P2	OUT	H	-	SEGMENT OUT
65	P97 (S15)	P1	OUT	H	-	SEGMENT OUT
66	VKK	-B	-	-	-	Power Supply for FL
67	P40 (KEY0)	Key0	IN	H	-	Key0
68	P41 (KEY1)	Key1	IN	H	-	Key1
69	P42 (KEY2)	Key2	IN	H	-	Key2
70	P43 (KEY3)	Key3	IN	H	-	Key3
71	P44 (KEY4)	Key4	IN	H	-	Key4
72	P45 (KEY5)	Key5	IN	H	-	Key5
73	P46 (KEY6)	Key6	IN	H	-	Key6
74	P47 (KEY7)	Key7	IN	H	-	Key7
75	P50 (A/D)	_DAVN	IN	L	-	RDS DAVAN
76	P51 (A/D)	_PSWN	IN	L	-	RDS PSWN
77	P52 (A/D)	_P_OPEN	IN	L	-	PANEL SW OPEN
78	P53 (A/D)	_P_CLOSE	IN	L	-	PANEL SW CLOSE
79	P54	VER_SET0	IN	-	-	$\frac{0}{0}$:F $\frac{1}{0}$:U $\frac{0}{1}$:K,KK $\frac{1}{1}$: /2-
80	P55	VER_SET1	IN	-	-	

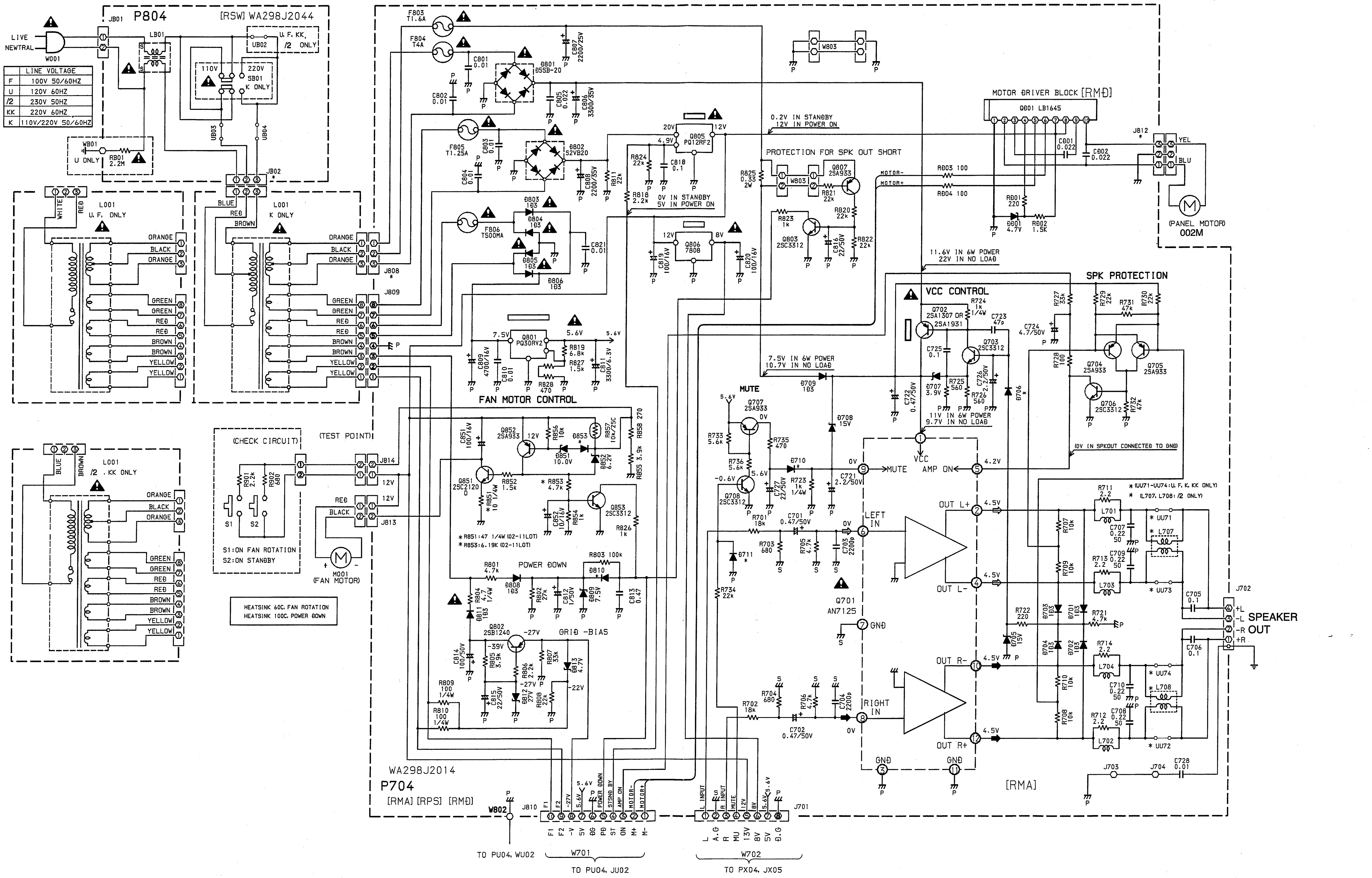
5. WIRING DIAGRAM

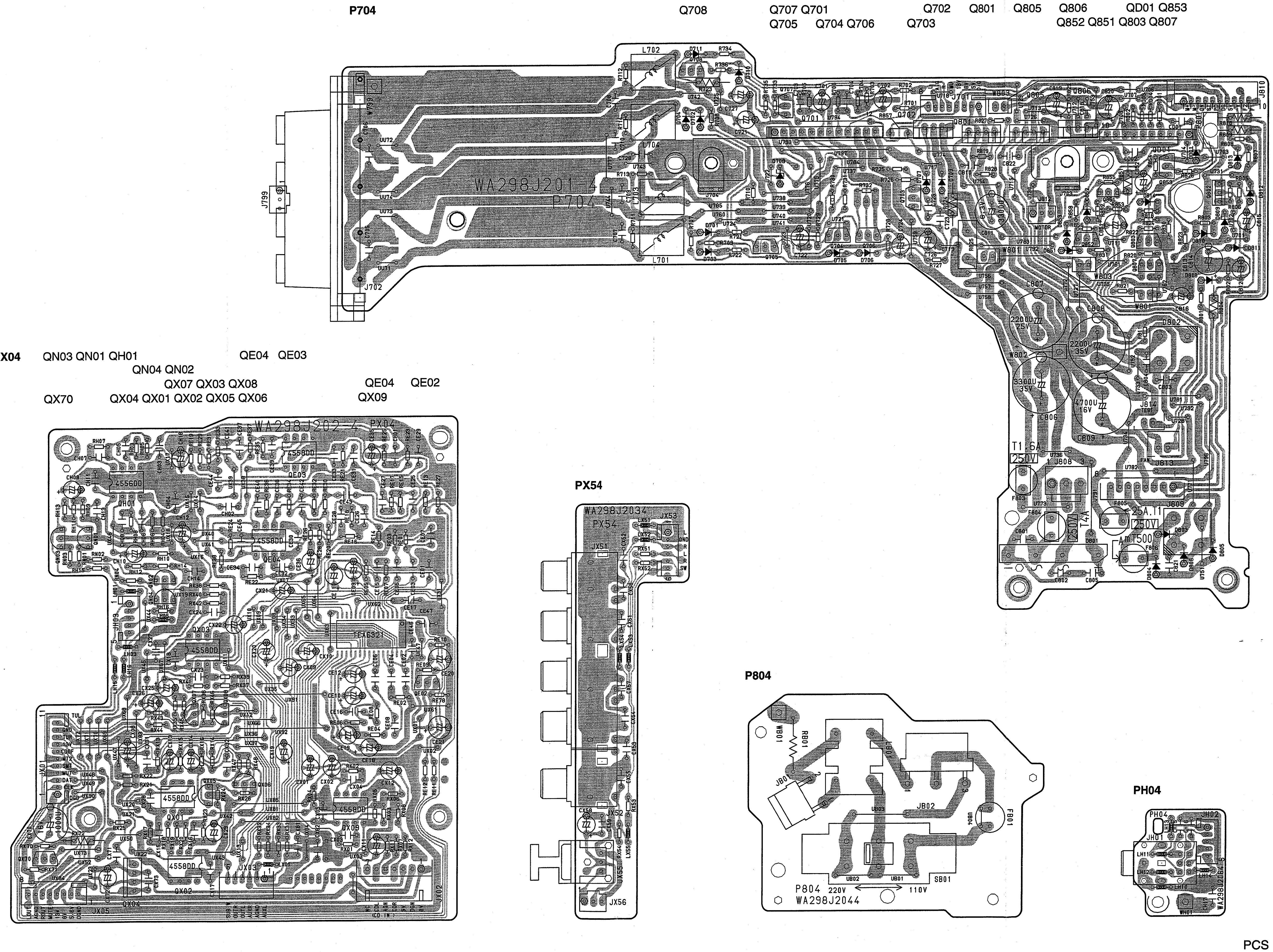

P804
POWER SUPPLY
PCB
JB02
JB01
L001
FAN
PANEL MOTOR
PS54
IR PCB
P16 KEY3 RC5 VDD GND
JS51
W501
W701
POWER SW PCB
PS64
KEY2 P16
JS61
WS02
WU09
WH01
PH04
PHONE PCB
JH02
WX03
JU07
P16 KEY3 RC5 VDD GND
JU02
P MOTOR N
P MOTOR P
AMP ON
STANDBY
POW DWN
GND
5.6V
VKK
F2
F1
JU01
GND SCL SDA MUTE SCMUT MUTE2 CDOFF +12V TU.R GND TU.L
JU05
KEY2 P16
JX01
DGD CLK DATA MUT SCMUT MUT2 CDSBY 12V TUR AGND TUL
JH03
R2 R1 GND L1 L2
J809
YL YL BRN BRN RED RED GR GR
J808
ORG BLK ORG
J813
BLK RED
J814
TEST
J810
F1 F2 -V 5V DG PD ST ON M- M+
P704
AMP PCB
W802
J812
YL BL
W702
JX05
L AGND R MUT 12V 8V 5.6V DGND
SHIELD
PU04
UCOM PCB
JX03
SUBW OUTR OUTL AUXR AGND AUXL
PX04
DSC PCB
WX01
WX02
JX02
NC CDL AGND CDR 5V DGND 8V
WU02
J701
D.G 5V 8V 12V MU R A.G L
JU10
KEY 7 KEY 6 KEY 4 P12/P15 KEY 5 KEY0 GND KEY1 GND KEY2 GND KEY 3 P13/P14
JU06
CD7 RESET SILD RAB SCL SDA NC GND NC NC
WU04
WU02
J203
NC NC GND +5V SDA SCL RAB SILD RESET
CD PCB
NAMI 8
J202
SL- SL+ IN SW GND DM+ DM-
J201
FOCUS- TRACK+ FOCUS+ TRACK- LASER GND MONI VOLUM A C D F E B +
J204
+8V DGND +5V CD R AGND CD L KILL
CD MECHA
CD94V5B1
WD02
JS01
KEY0 P12/P15 KEY1 GND KEY2 GND KEY 3 P13/P14 NC NC
JS02
PS04
SW PCB
WU03
JS11
KEY0 P12/P15 KEY1 GND KEY2 GND KEY 3 P13/P14 NC NC
PS14
SW PCB
JX53
PX54 IN/OUT PCB
WU08
JU03
GND (TU) RDS TU WE TU SDA TU CLK TU ST/MONO TUNER L GND TUNER R +12V
WU05
OR
WU06
TUNER PCB
TUNER 95
or ECO 5
F ONLY
JA01
PA04
V+ STEREO STSIG VCOKILL R-OUT L-OUT L-FM R-FM +FM GND AM-IF
AM STEREO PCB
JU08
P CLOSE GND P OPEN GND
WU07
SW ASSY

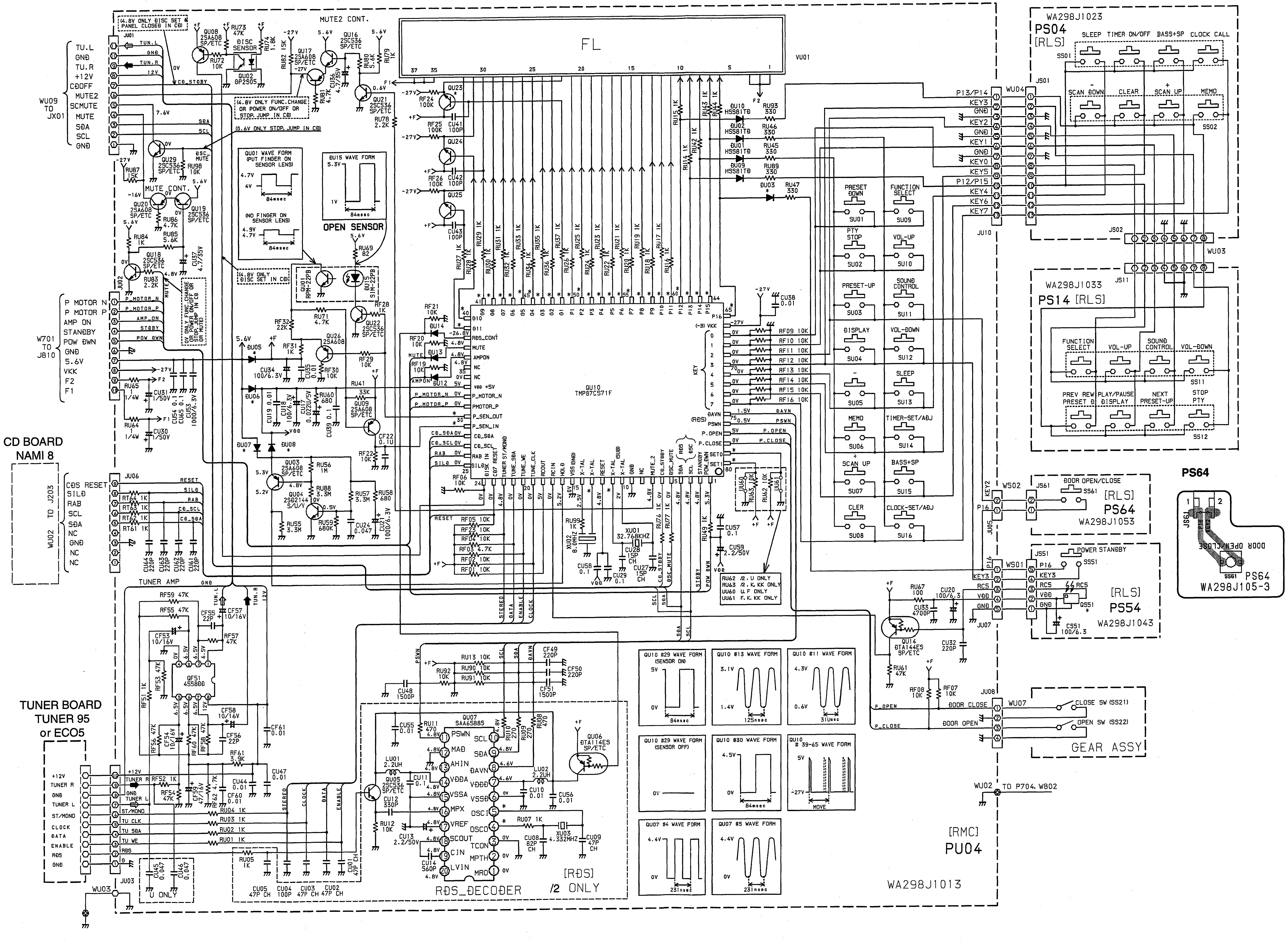
6. SCHEMATIC DIAGRAM AND PARTS LOCATION



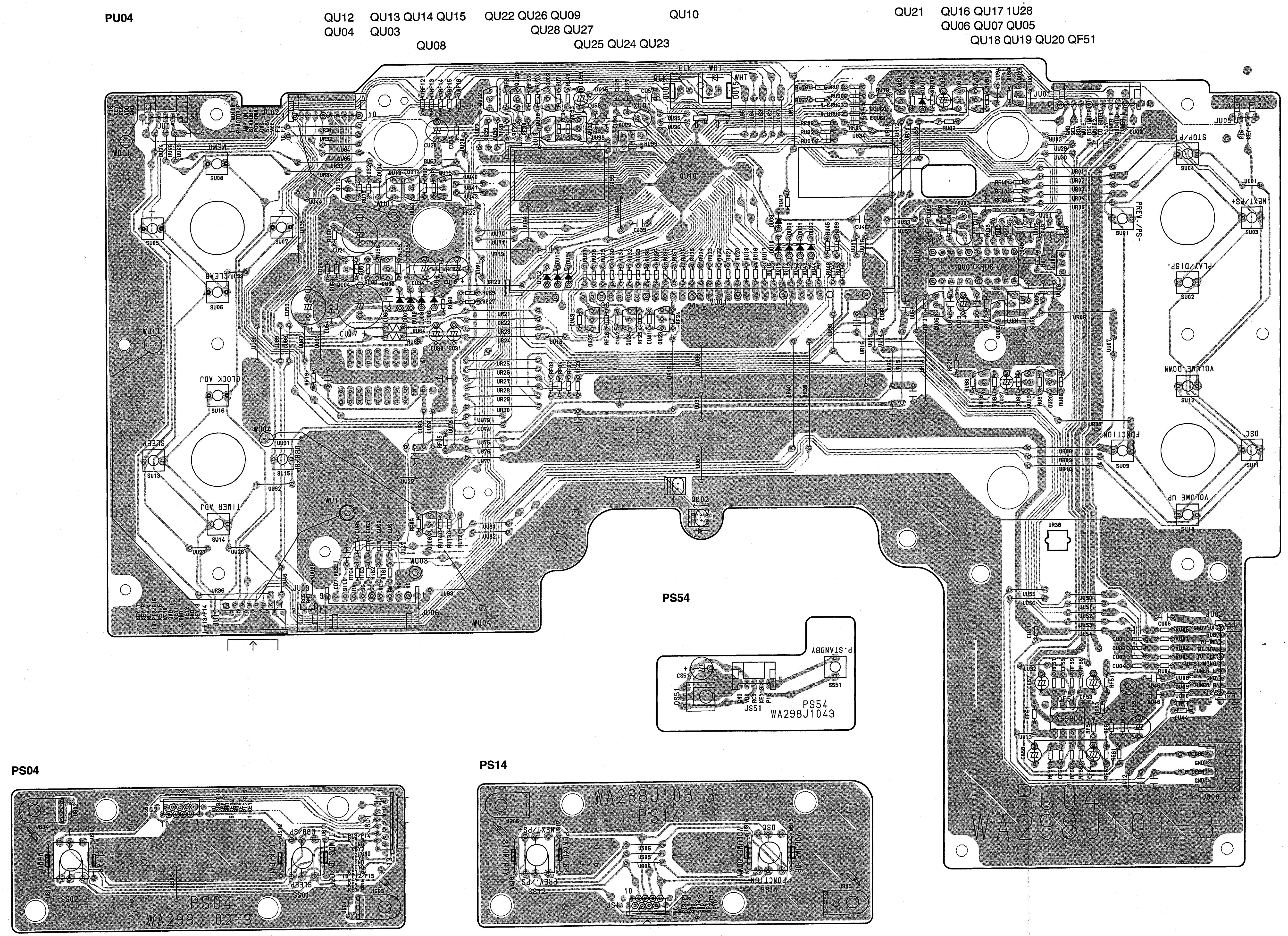
AUX IN
L
R
LINE OUT
L
R
SUBWOOFER OUT (MONO)
JX51
JX52
JX53
LX51 2.2UH
LX52 2.2UH
LX53 2.2UH
LX54 2.2UH
LX55 2.2UH
CX51 560P
CX52 560P
CX53 560P
CX54 560P
CX55 560P
RX51 470
RX52 470
RX53 100
RX54 100K
PX54
WA298J2034 [RRJ]
WX01
LX01 4.7UH
JX03
CX81 470P
CX82 470P
WA298J2024
PX04
[RRK] [RVR] [RHP]
RX26 470
RX24 470
RX45 470
RX46 470
CX25 2.2/50V
CX26 2.2/50V
CX29 10/16V
RX23 330K
CX16 220P
RX20 27K
RX19 27K
QX06 2SC2878
QX05 2SC2878
QX08 2SC2878
QX07 2SC2878
RX35 47K
RX36 47K
RX48 2.2K
RX47 2.2K
RX44 2.2K
RX43 2.2K
MUTE2
RX38 33K
RX40 33K
CX24 22P CH
RX42 100K
QX03 4558DD
CX18 0.01
CX23 22P CH
RX41 100K
RX39 33K
RX37 33K
CX17 0.01
CX27 0.01
QX02 4558DD
CX15 0.1
SUB W.
RX18 10K
RX17 10K
RX16 47K
RX15 47K
QX01 4558DD
CX28 0.01
CX13 10/16V
CX14 10/16V
RX13 47K
CX31 0.022
CX32 0.022
RX14 47K
MUTE
SCMUTE
CX22 2.2/50V
CX21 2.2/50V
RX32 39K
RX31 39K
RX34 22K
RX33 22K
CX20 0.47/50V
CX19 0.47/50V
PHONE POPS KILLER
QX70 2SD2144
RX72 4.7 1/4W
RX21 3.9K
RX22 4.7K
RX70 470
RX71 100K
CX08 47/16V
CX70 1000/16V
RE33 47K
RE31 47K
RE35 47K
CE41 470P
CE37 470P
CE39 150P
RE29 100K
QE03 4558DD
RE37 47K
RE19 22K
RE17 22K
CE27 470P
RE15 22K
CE29 1500P
CE31 470P
CE33 220P
RE21 33K
RE23 10K
CE35 1/50V
RE25 5.6K
CE25 0.33
RE27 10K
JX05
W702 (FROM J701)
D GND
5.6V
12V
8V
MUTE
R
A GND
L
[RHP]
CH03 100P
CH01 0.1
RH03 27K
CH05 470P
RH07 330K
CH09 47/16V
RH11 39
RH13 39
RH15 39
LH01 180UH
CH07 22P 50V
RH09 47K
QN01 2SC2878
QN03 2SC2878
CH13 220P
RH05 27K
CH18 47/16V
QH01 4558DD
RN01 2.2K
RN03 2.2K
RH06 27K
CH11 0.01
CH12 47/16V
RN02 2.2K
RN04 2.2K
RH04 27K
CH06 470P
CH08 22P 50V
RH10 47K
QN02 2SC2878
QN04 2SC2878
CH14 220P
RH16 39
LH05 180UH
LH03 180UH
CH04 100P
CH02 0.1
RH08 330K
CH10 47/16V
RH12 39
RH14 39
JH03
WX03
JH02
PHONE
JH01
CH16 0.01
CH15 0.01
CH17 0.1
WH01
[RHP]
PH04
WA298J2064
JX01
TUN.L
TUN.R
12V
CDSTBY
MUTE2
SCMUTE
MUTE
DATA
CLK
WU09 (FROM JU01)
CD 5V ON/OFF CONT.
RX25 2.2K
QX04 PQ05RF2
5V
CX71 0.01
CX73 0.01
CX72 47/16V
JX02
8V
5V
CD-R
CD-L
NC
WX02 (FROM J204)
RX04 47K
RX06 47K
CX04 220P
RX02 10K
CX02 2.2/50V
RX08 100K
CX12 2.2/50V
QX09 4558DD
RX12 1K
RX11 1K
CX11 2.2/50V
RX07 100K
RX05 47K
RX03 47K
RX01 10K
CX03 220P
CX05 0.01
CX01 2.2/50V
CE17 0.1
CE15 8200P
RE07 22K
RE05 2.2K
RE03 4.7K
CE07 0.47
RE01 4.7K
CE11 0.47/50V
CE09 0.27/50V
CE05 0.22 50
CE03 0.47
CE01 5600P
RE13 1K
CE44 0.01
CE43 0.01
INPUT A LEFT
INPUT B LEFT
INPUT MONO
INPUT C LEFT
MUTE
INPUT D LEFT
LINEAR OUT L
VOLUME1 LOUDN. LEFT
BASS LEFT
TREBLE LEFT
VOLUME2 LEFT
FRONT
REAR
QE01
SOURCE-SELECTOR
LOGIC-CONTROL
I²C
TEA6321
INPUT A RIGHT
INPUT B RIGHT
RIPPLE IN
INPUT C RIGHT
RIPPLE IN
INPUT D RIGHT
LINEAR OUT R
VOLUME1 LOUDN. RIGHT
BASS RIGHT
TREBLE RIGHT
VOLUME2 RIGHT
VCC
CE19 47/16V
CE18 47/16V
CE12 0.47/50V
CE10 0.27/50V
CE06 0.22 50
CE04 0.47
CE08 0.47
CE02 5600P
RE06 2.2K
RE08 22K
CE16 8200P
RE04 4.7K
RE02 4.7K
QE02 2SD2144
RE09 2.7K
RE10 10K
CE20 100/16V
CE21 100/16V
CE46 0.1
CE47 1
RE14 1K
RE12 1K
RE11 1K
CLK
DATA
RE28 10K
CE26 0.33
RE30 100K
RE34 47K
CE42 470P
CE38 470P
CE40 150P
RE36 47K
RE32 47K
QE04 4558DD
RE38 47K
RE20 22K
CE45 0.01
RE18 22K
CE28 470P
RE16 22K
CE30 1500P
CE32 470P
RE22 33K
CE34 220P
RE24 10K
CE36 1/50V
RE26 5.6K


P804
[RSW] WA298J2044
LIVE
NEWTRAL
W001
LINE VOLTAGE
F 100V 50/60HZ
U 120V 60HZ
/2 230V 50HZ
KK 220V 60HZ
K 110V/220V 50/60HZ
U ONLY
RB01 2.2M
U.F.KK, /2 ONLY
110V
220V
SB01
K ONLY
L001
U.F. ONLY
K ONLY
/2 .KK ONLY
ORANGE
BLACK
GREEN
RED
BROWN
YELLOW
WHITE
BLUE
(CHECK CIRCUIT)
(TEST POINT)
S1:ON FAN ROTATION
S2:ON STANDBY
M001 (FAN MOTOR)
HEATSINK 60C. FAN ROTATION
HEATSINK 100C. POWER DOWN
F803 T1.6A
F804 T4A
F805 T1.25A
F806 T500MA
D801 D5SB-20
D802 S2VB20
Q805 PQ12RF2
Q806 7808
Q801 PQ30RV2
FAN MOTOR CONTROL
POWER DOWN
GRID -BIAS
0.2V IN STANDBY
12V IN POWER ON
0V IN STANDBY
5V IN POWER ON
PROTECTION FOR SPK OUT SHORT
MOTOR DRIVER BLOCK [RMD]
Q001 LB1645
(PANEL MOTOR)
002M
J812
YEL
BLU
11.6V IN 6W POWER
22V IN NO LOAD
VCC CONTROL
SPK PROTECTION
7.5V IN 6W POWER
10.7V IN NO LOAD
11V IN 6W POWER
9.7V IN NO LOAD
MUTE
(0V IN SPKOUT CONNECTED TO GND)
VCC
AMP ON
LEFT IN
RIGHT IN
OUT L+
OUT L-
OUT R-
OUT R+
GND
Q701 AN7125
*(UU71-UU74:U, F, K, KK ONLY)
*(L707, L708: /2 ONLY)
J702
SPEAKER OUT
+L
-L
-R
+R
[RMA]
WA298J2014
P704
[RMA] [RPS] [RMD]
W802
J810
J701
F1 F2 -V 5V DG PD ST ON M+ M-
L A.G R MU 13V 8V 5V D.G
TO PU04, WU02
W701
TO PU04, JU02
W702
TO PX04, JX05


P704
Q708
Q707 Q701
Q705 Q704 Q706
Q702
Q703
Q801
Q805
Q806
Q852 Q851 Q803 Q807
QD01 Q853
WA298J201-4
P704
J799
J702
J810
T1.6A 250V
T4A 250V
T1.25A 250V
PX04
QN03 QN01 QH01
QN04 QN02
QX07 QX03 QX08
QX70
QX04 QX01 QX02 QX05 QX06
QE04 QE03
QE04 QE02
QX09
WA298J202-4 PX04
PX54
WA298J2034
PX54
P804
P804
WA298J2044
220V
110V
PH04
PH04


FL
VU01
QU10
TMP87C571F
MUTE2 CONT.
MUTE CONT.
OPEN SENSOR
QU01 WAVE FORM (PUT FINGER ON SENSOR LENS)
QU15 WAVE FORM
TU.L
GND
TU.R
+12V
CDOFF
MUTE2
SCMUTE
MUTE
SDA
SCL
GND
WU09 TO JX01
P MOTOR N
P MOTOR P
AMP ON
STANDBY
POW DWN
GND
5.6V
VKK
F2
F1
W701 TO J810
CD BOARD
NAMI 8
CDS RESET
SILD
RAB
SCL
SDA
NC
GND
NC
NC
WU02 TO J203
TUNER AMP
TUNER BOARD
TUNER 95
or ECO5
+12V
TUNER R
GND
TUNER L
ST/MONO
CLOCK
DATA
ENABLE
RDS
GND
WU03
U ONLY
QU07
SAA6588S
RDS_DECODER
[RDS]
/2 ONLY
[RMC]
PU04
WA298J1013
WA298J1023
PS04
[RLS]
SLEEP
TIMER ON/OFF
BASS+SP
CLOCK CALL
SCAN DOWN
CLEAR
SCAN UP
MEMO
WA298J1033
PS14 [RLS]
FUNCTION SELECT
VOL-UP
SOUND CONTROL
VOL-DOWN
PREV REW PRESET D
PLAY/PAUSE DISPLAY
NEXT PRESET-UP
STOP PTY
PRESET DOWN
PTY STOP
PRESET-UP
DISPLAY
MEMO
SCAN UP
CLER
TIMER-SET/ADJ
BASS+SP
CLOCK-SET/ADJ
DOOR OPEN/CLOSE
[RLS]
PS64
WA298J1053
POWER STANDBY
[RLS]
PS54
WA298J1043
PS64
DOOR OPEN/CLOSE
WA298J105-3
CLOSE SW (SS21)
OPEN SW (SS22)
GEAR ASSY
DOOR CLOSE
DOOR OPEN
TO P704, W802
QU10 #29 WAVE FORM (SENSOR ON)
QU10 #13 WAVE FORM
QU10 #11 WAVE FORM
QU10 #29 WAVE FORM (SENSOR OFF)
QU10 #30 WAVE FORM
QU10 # 39-65 WAVE FORM
QU07 #4 WAVE FORM
QU07 #5 WAVE FORM
RU62 /2. U ONLY
RU63 /2. K. KK ONLY
UU60 U. F ONLY
UU61 F. K. KK ONLY

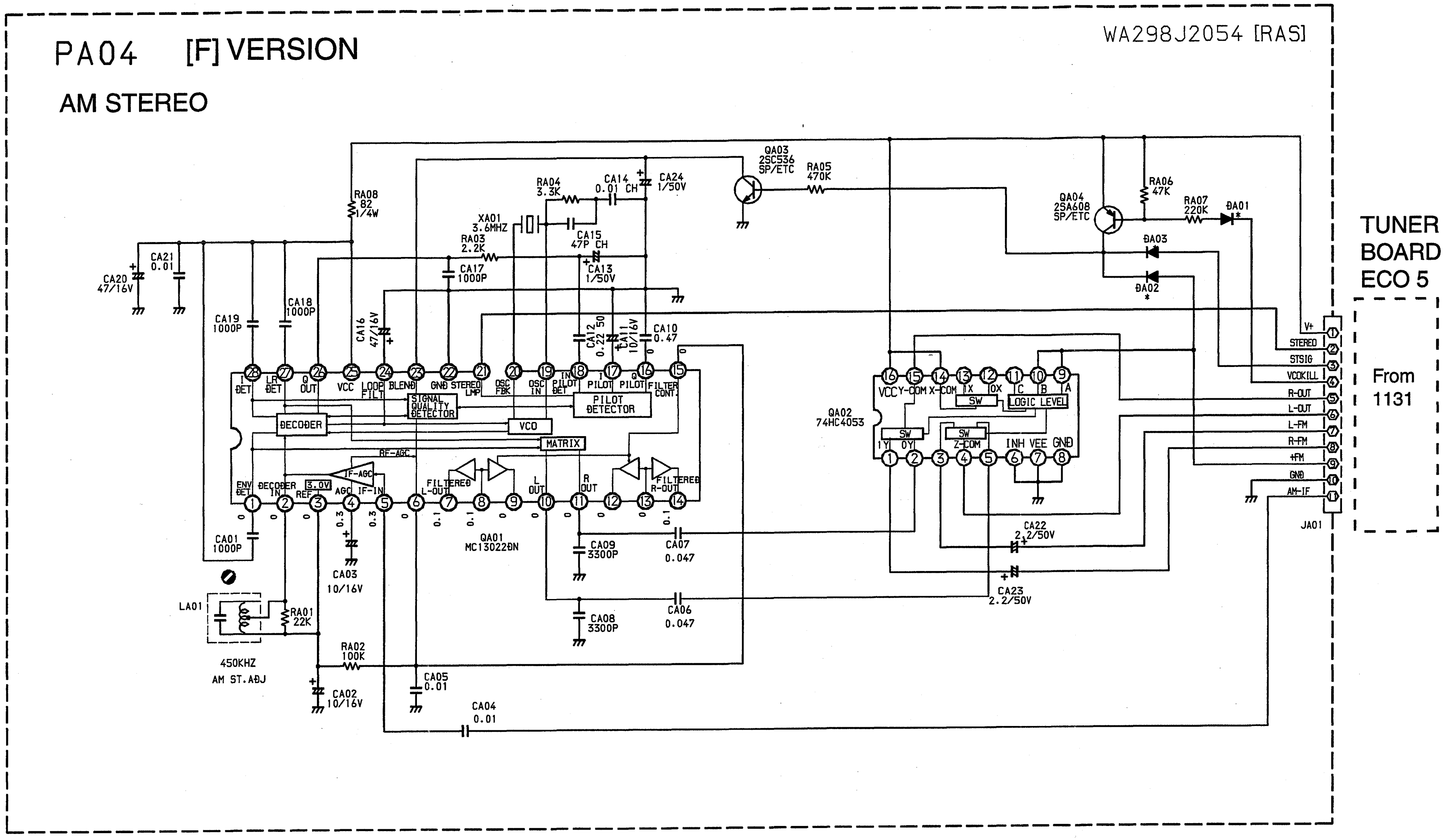
PU04

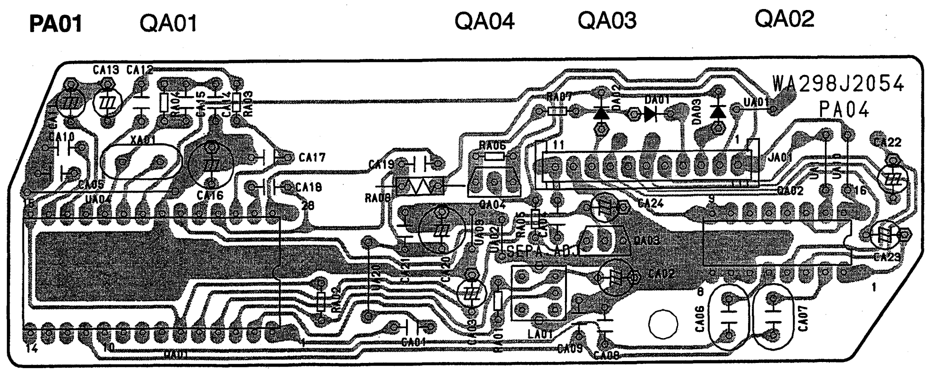

QU12
QU04
QU13 QU14 QU15
QU03
QU08
QU22 QU26 QU09
QU28 QU27
QU25 QU24 QU23
QU10
QU21
QU16 QU17 1U28
QU06 QU07 QU05
QU18 QU19 QU20 QF51
MENU
CLEAR
CLOCK ADJ
SLEEP
DBB/SP
TIMER ADJ
STOP/PTY
NEXT/PS+
PREV./PS-
PLAY/DISP.
VOLUME DOWN
FUNCTION
OSC
VOLUME UP
QU07/RDS
4558DD
PU04
WA298J101-3
P.STANDBY
PS54
WA298J1043
PS04
WA298J102-3
WA298J103-3
PS14

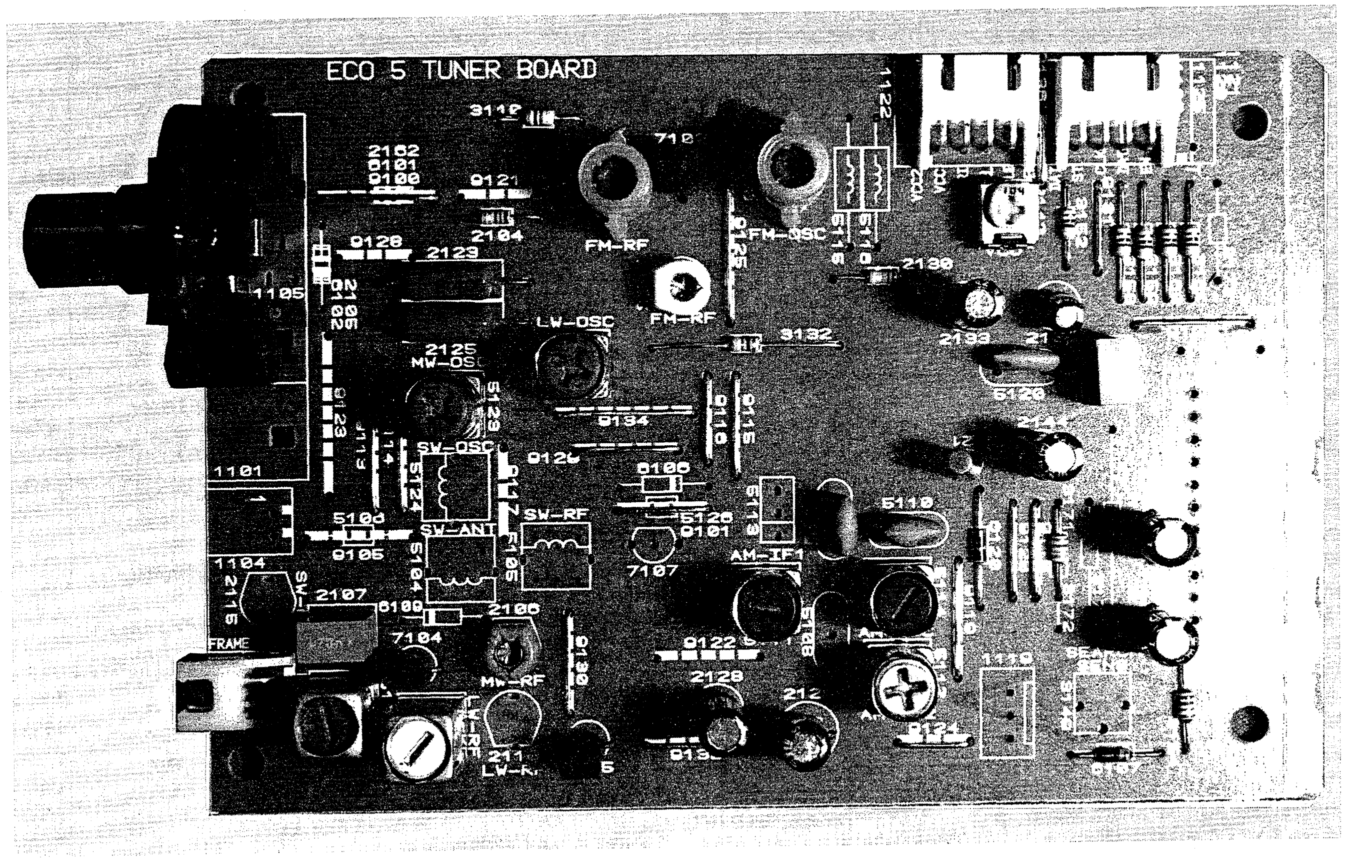
PS54

PS04

PS14


PA04 [F] VERSION
AM STEREO
WA298J2054 [RAS]
TUNER BOARD ECO 5
From 1131
QA01 MC13022BN
QA02 74HC4053
QA03 2SC536 SP/ETC
QA04 2SA608 SP/ETC
XA01 3.6MHZ
RA01 22K
RA02 100K
RA03 2.2K
RA04 3.3K
RA05 470K
RA06 47K
RA07 220K
RA08 82 1/4W
CA01 1000P
CA02 10/16V
CA03 10/16V
CA04 0.01
CA05 0.01
CA06 0.047
CA07 0.047
CA08 3300P
CA09 3300P
CA10 0.47
CA11 10/16V
CA12 0.22 50
CA13 1/50V
CA14 0.01 CH
CA15 47P CH
CA16 47/16V
CA17 1000P
CA18 1000P
CA19 1000P
CA20 47/16V
CA21 0.01
CA22 2.2/50V
CA23 2.2/50V
CA24 1/50V
DA01
DA02
DA03
LA01
450KHZ AM ST.ADJ
JA01
V+
STEREO
STSIG
VCOKILL
R-OUT
L-OUT
L-FM
R-FM
+FM
GND
AM-IF
DECODER
VCO
MATRIX
SIGNAL QUALITY DETECTOR
PILOT DETECTOR
LOGIC LEVEL
SW


PA01
QA01
QA04
QA03
QA02
WA298J2054
PA04


ECO 5 TUNER BOARD
FM-RF
FM-OSC
LW-OSC
MW-OSC
SW-OSC
SW-RF
SW-ANT
AM-IF1
MW-RF
LW-RF
FRAME
1101
1104
1105
1122
2123
2125
2128
2130
7104
7107
7110

TUNER BOARD ECO5

TABLE OF CONTENTS

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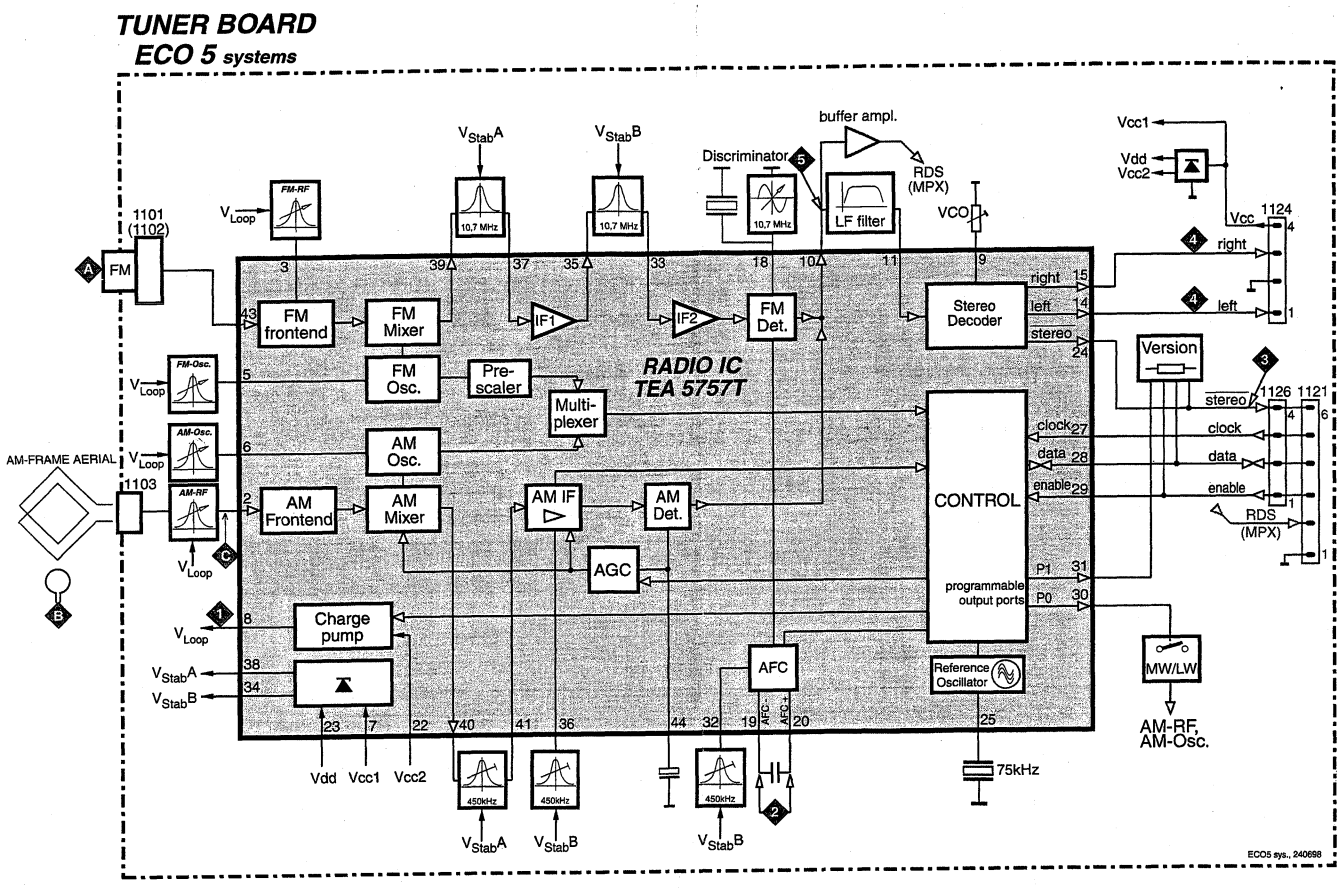
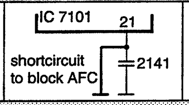
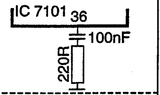
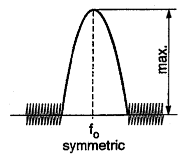
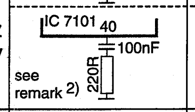
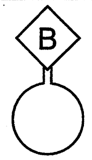
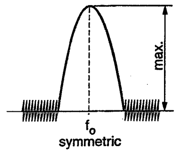
Parts list 7B-5

BLOCK DIAGRAM


TUNER BOARD
ECO 5 systems
RADIO IC
TEA 5757T
FM frontend
FM Mixer
FM Osc.
Pre-scaler
Multi-plexer
IF1
IF2
FM Det.
Stereo Decoder
AM Osc.
AM Frontend
AM Mixer
AM IF
AM Det.
AGC
Charge pump
CONTROL
programmable output ports
Reference Oscillator
AFC
Version
MW/LW
AM-RF, AM-Osc.
FM-RF
FM-Osc.
AM-Osc.
AM-RF
Discriminator
buffer ampl.
RDS (MPX)
LF filter
VCO
10,7 MHz
450kHz
75kHz
VStabA
VStabB
VLoop
Vdd
Vcc1
Vcc2
Vcc
1101 (1102)
1103
1124
1126
1121
FM
AM-FRAME AERIAL
right
left
stereo
clock
data
enable
P1
P0
A
B
C
1
2
3
4
5
ECO5 sys., 240698

TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F	 shortcircuit to block AFC	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX ↕
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz 1)
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C Δf=±15kHz V_{RF} = 3mV		5111	4	
			 see remark 2)	5112		
AM AFC **MW**		C continuous wave V_{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF 3)						
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B  Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	4	 ↕
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		↕
	560kHz		560kHz	5102		

ECO5, discr. coil, 090797

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

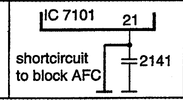
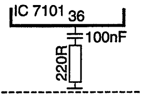
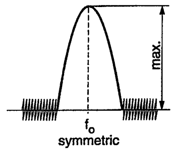
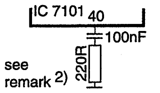
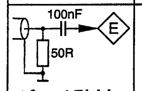
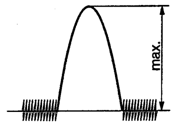
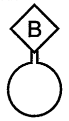
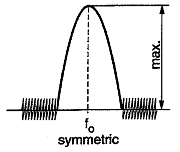
2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

↕ Repeat

TUNER ADJUSTMENT TABLE (ECO5 FM/MW- stereo versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz			108MHz	5130	1	8V ±0.2V
			87.5MHz	check		4.3V ±0.5V
FM Japan 76 - 90MHz plus Ch1 95.75MHz, Ch2 101,75MHz, Ch3 107.75MHz			107,75MHz	5130		8V ±0.2V
			76MHz	check		2.4V ±0.5V
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
MW FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F	 shortcircuit to block AFC	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	5	MAX ↕
	87.5MHz		87.5MHz	5131		
FM Japan 76 - 90MHz plus Ch1 95.75MHz, Ch2 101,75MHz, Ch3 107.75MHz	107.75MHz		107.75MHz	2155		↕
	76MHz		76MHz	5131		
VCO						
FM	98MHz, 1mV (83MHz for Japan) continuous wave	A	98MHz (83MHz for Japan)	3142	3	152kHz ±1kHz 1)
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	C Δf=±15kHz V_{RF} = 3mV		5111	5	
			 see remark 2)	5112		
AM AFC **MW**		C continuous wave V_{RF} = 10mV		5114	2	0 ± 2 mV DC
IF stereo module **MW**		 Δf=±15kHz V_{RF} = 1mV		5240	4	
AM RF 3)						
MW FM/MW-version, 9kHz grid 531 - 1602kHz	1494kHz	B  Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	4	 ↕
	558kHz		558kHz	5102		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		↕
	560kHz		560kHz	5102		

ECO5 AM stereo, discr.coil 090797

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

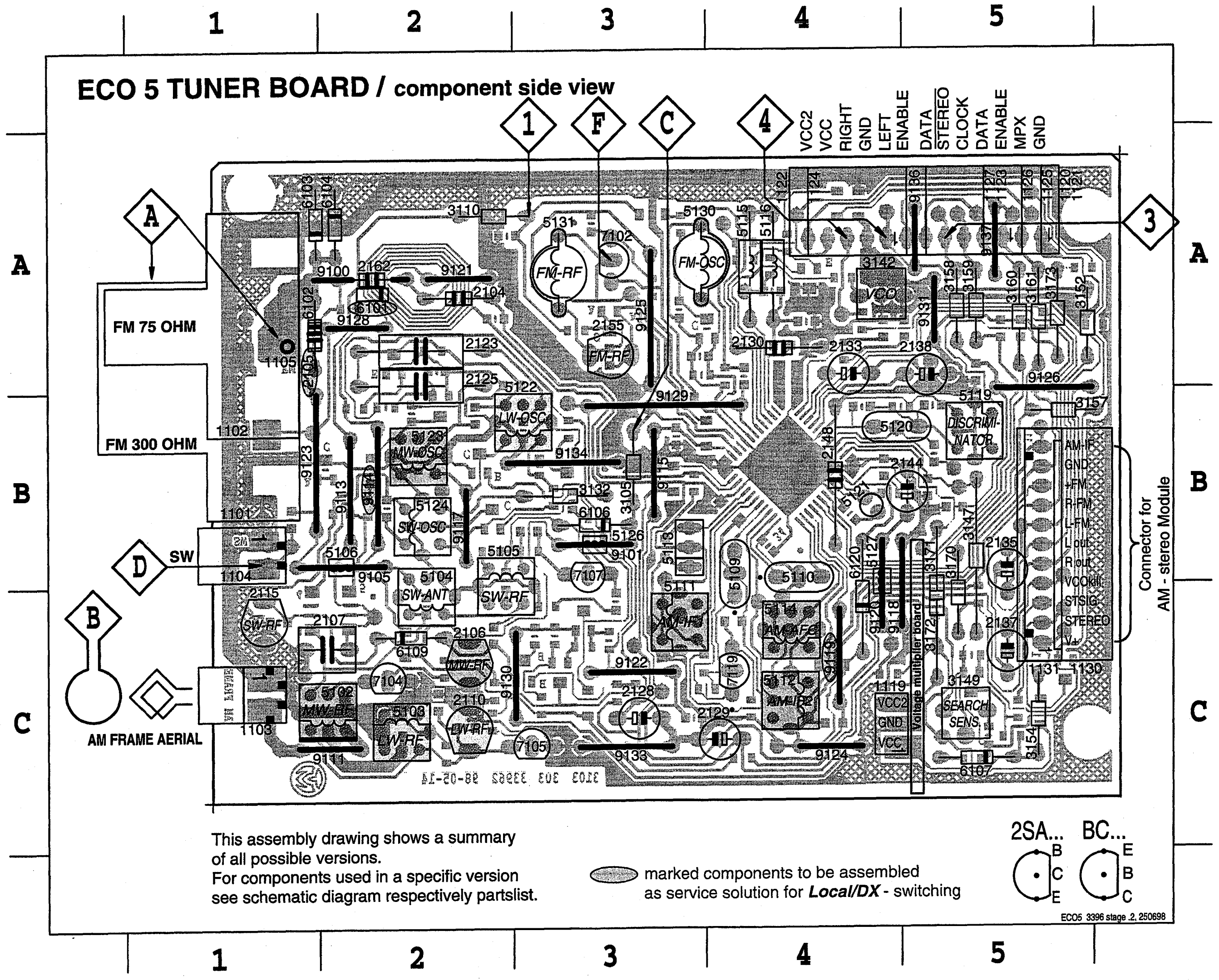
2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used !

↕ Repeat

1101 A1	2106 C2	2137 C5	3149 C5	3173 A5	5114 C4	5130 A3	7104 C2	9117 B2	9129 B3
1102 A1	2107 C2	2138 A5	3152 A5	5102 C2	5115 A4	5131 A3	7105 C3	9118 B4	9130 C3
1103 C1	2110 C2	2144 B5	3154 C5	5103 C2	5116 A4	6101 A2	7107 B3	9119 C4	9131 A5
1104 B1	2115 C1	2148 B4	3157 B5	5104 C2	5119 B5	6102 A1	7119 C4	9120 B4	9133 C3
1105 A1	2123 A2	2155 A3	3158 A5	5105 B2	5120 B4	6103 A1	9100 A2	9121 A2	9134 B3
1119 C5	2125 A2	2162 A2	3159 A5	5106 B2	5121 B4	6104 A2	9101 B3	9122 C3	9136 A5
1120 A5	2128 C3	3105 B3	3160 A5	5109 B4	5122 B3	6106 B3	9105 B2	9123 B1	9137 A5
1130 B5	2129 C4	3110 A2	3161 A5	5110 B4	5123 B2	6107 C5	9111 C2	9124 C4	
1131 B5	2130 A4	3132 B3	3170 C5	5111 C3	5124 B2	6109 C2	9113 B2	9125 A3	
2104 A2	2133 A4	3142 A4	3171 C5	5112 C4	5126 B3	6120 C4	9114 B2	9126 B5	
2105 A1	2135 B5	3147 B5	3172 C5	5113 B3	5127 B4	7102 A3	9115 B3	9128 A2	

ECO 5 TUNER BOARD / component side view

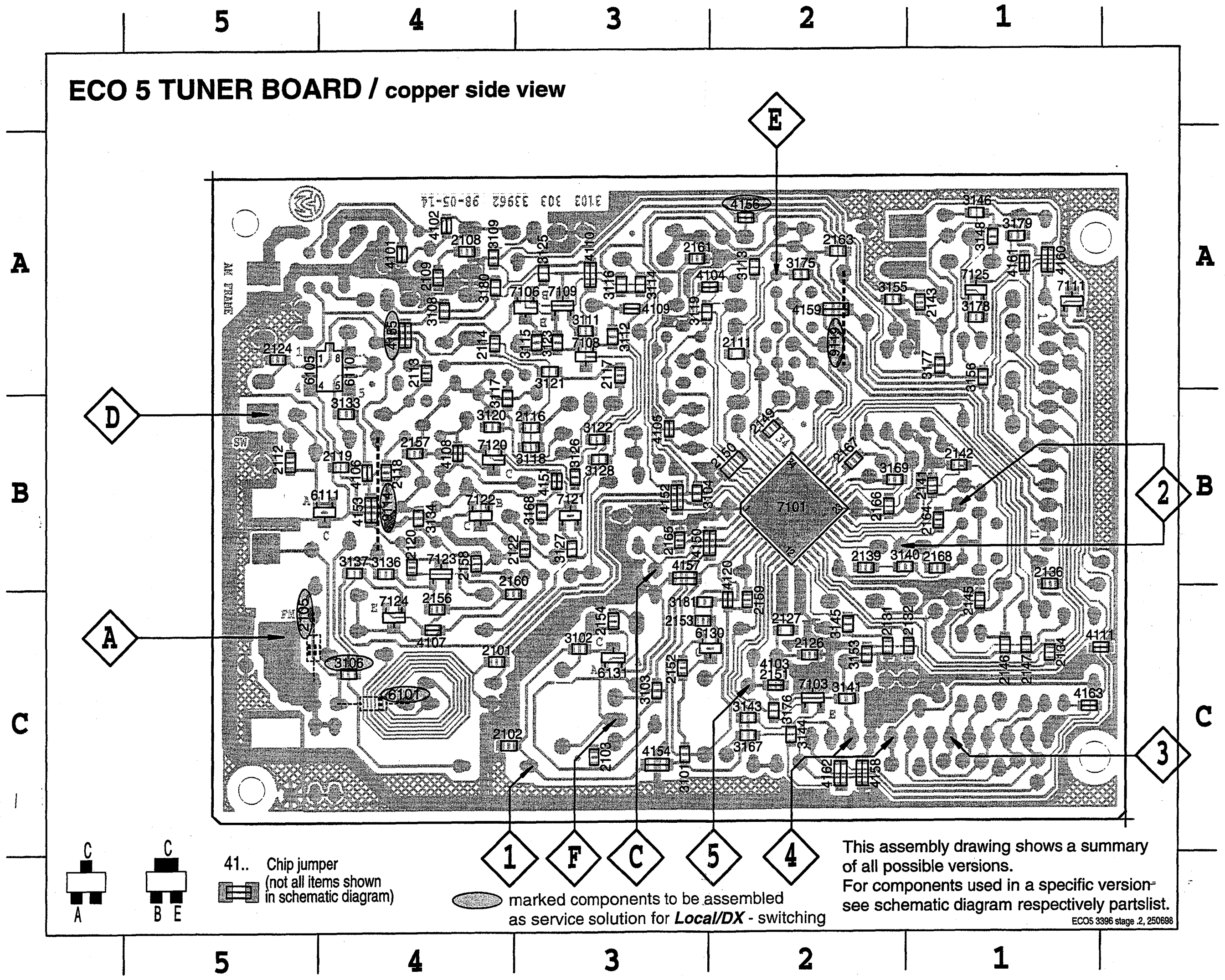

1
2
3
4
5
A
B
C
FM 75 OHM
FM 300 OHM
SW
AM FRAME AERIAL
VCC2
VCC
RIGHT
GND
LEFT
ENABLE
DATA
STEREO
CLOCK
DATA
ENABLE
MPX
GND
FM-RF
FM-OSC
LW-OSC
MW-OSC
SW-OSC
SW-ANT
SW-RF
MW-RF
LW-RF
AM-IF
DISCRIMI-NATOR
SEARCH SENS.
Connector for AM - stereo Module
2SA...
BC...
B
C
E
ECO5 3396 stage 2, 250698

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

▨ marked components to be assembled as service solution for ***Local/DX*** - switching

2101 C4	2118 B4	2139 B2	2153 C3	2166 B2	3112 A3	3123 A3	3143 C2	3175 A2	4105 B3	4153 B4	6105 A4	7120 B4
2102 C4	2119 B4	2141 B1	2154 C3	2167 B2	3113 A2	3125 A3	3144 C2	3176 C2	4106 B4	4154 C3	6110 A4	7121 B3
2103 C3	2120 B4	2142 B1	2156 C4	2168 B1	3114 A3	3126 B3	3145 C2	3177 A1	4107 C4	4155 A4	6111 B4	7122 B4
2108 A4	2122 B3	2143 A1	2157 B4	3101 C3	3115 A3	3127 B3	3146 A1	3178 A1	4108 B4	4156 A2	6130 C2	7123 B4
2109 A4	2124 A5	2145 C1	2158 B4	3102 C3	3116 A3	3128 B3	3148 A1	3179 A1	4109 A3	4157 B3	6131 C3	7124 C4
2111 A2	2126 C2	2146 C1	2159 C2	3103 C3	3117 B4	3133 B4	3153 C2	3180 A4	4110 A3	4158 C2	7101 B2	7125 A1
2112 B5	2127 C2	2147 C1	2160 C4	3104 B3	3118 B3	3134 B4	3155 A2	3181 C3	4111 C1	4159 A2	7103 C2	
2113 A4	2131 C2	2149 B2	2161 A3	3106 C4	3119 A3	3136 B4	3156 A1	4101 A4	4120 C2	4160 A1	7106 A3	
2114 A4	2132 C1	2150 B2	2163 A2	3108 A4	3120 B4	3137 B4	3167 C2	4102 A4	4150 B2	4161 A1	7108 A3	
2116 B3	2134 C1	2151 C2	2164 B1	3109 A4	3121 A3	3140 B2	3168 B3	4103 C2	4151 B3	4162 C1	7109 A3	
2117 A3	2136 B1	2152 C3	2165 B3	3111 A3	3122 B3	3141 C2	3169 B2	4104 A2	4152 B3	4163 C1	7111 A1	

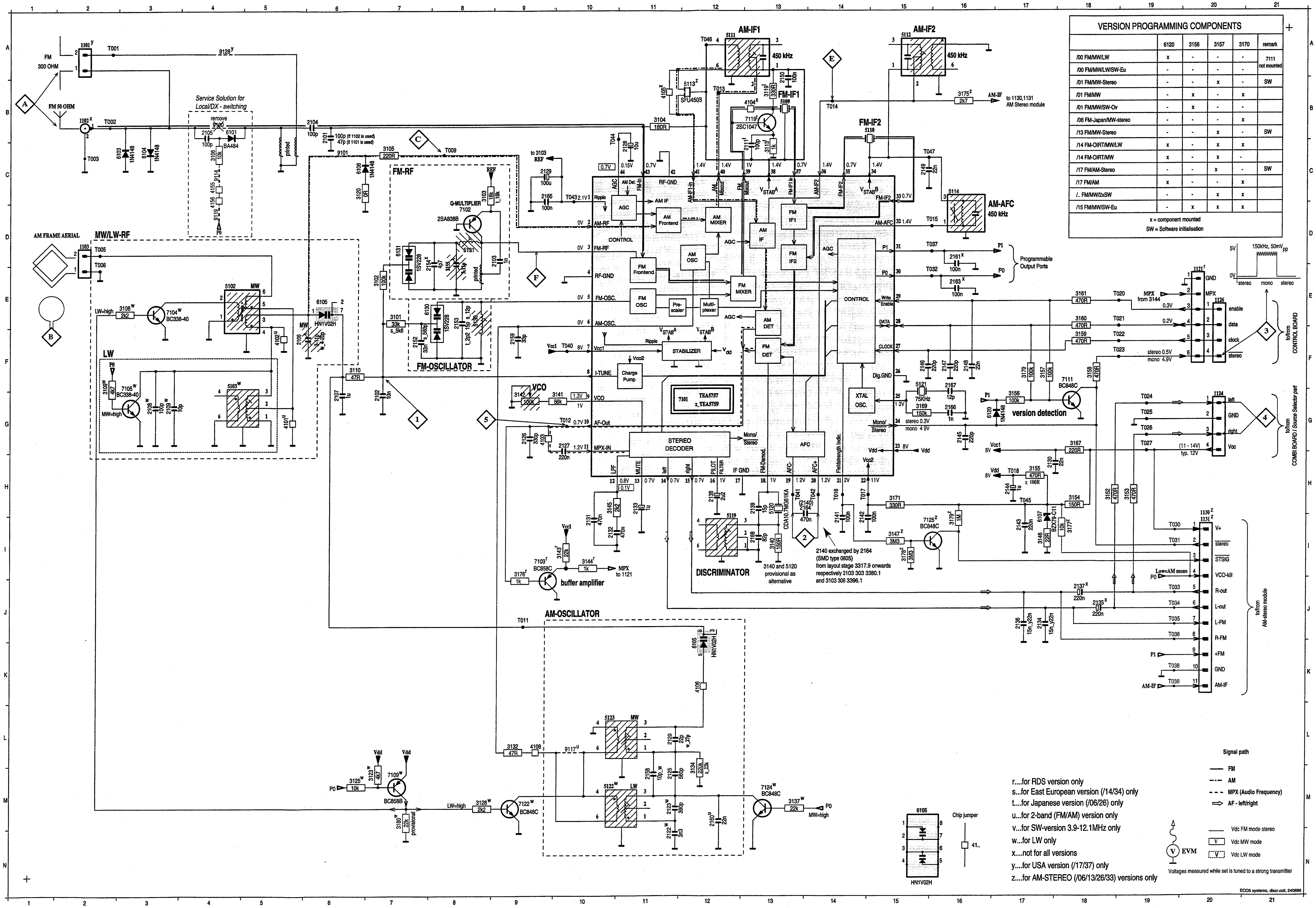
ECO 5 TUNER BOARD / copper side view


5
4
3
2
1
A
B
C
E
D
A
1
F
C
5
4
2
3
7101
3103 303 33962 98-05-14
C
A
C
B E
41..
Chip jumper
(not all items shown in schematic diagram)
ECO5 3396 stage 2, 250698

▨ marked components to be assembled as service solution for ***Local/DX*** - switching

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER BOARD ECO5 / Systems


FM 300 OHM
FM 50 OHM
1101 y
1102 x
T001
T002
T003
9128 y
Service Solution for Local/DX - switching
remove 9100
2105 100p
6101 BA484
3106 10k
4155
4156
9114
9119
6103 1N4148
6104 1N4148
2104 100p
2101
100p (if 1102 is used)
47p (if 1101 is used)
printed
3105 220R
9101
T009
6106 1N4148
3120 0R
AM FRAME AERIAL
MW/LW-RF
1103
T005
T006
LW=high
3108 w 2k2
7104 w BC338-40
5102 MW
6105 HN1V02H
MW=high
4102 u
4101 u
2106
LW
3109 w 4k7
7105 w BC338-40
2108 w 100p
2109 w 10p
5103 w
3110 47R
2107 1u
2102 10n
FM-RF
Q-MULTIPLIER 7102
2SA838B
3103 18k
REF
6131 1SV228
2154 s 4p7
5131
2103 1n
3102 100k
FM-OSCILLATOR
6130 1SV228
2152 33n
5130
2153 12p
3101 33k
2159 33p
to 3103 REF
2129 100u
2165 100n
T043
T044
2128 10u
3104 180R
AM-IF1
5111
450 kHz
T046
4105 x
5113 z SFU450B
T013
3119 330R
2150 100n
FM-IF1
5109
4104 x
7119 2SC1047
2111 100p
3113 1k
AM-IF2
5112
3175 z 2k7
AM-IF to 1130,1131 AM Stereo module
T014
FM-IF2
5110
T047
2149 22n
5114
AM-AFC 450 kHz
T015
AGC
AM Det.
FM-IN
RF-GND
AM-IF-in
AM-IF
FM Mixout
FM-IF1 in
FM-IF2
Ripple
AM IF
AM Frontend
AM MIXER
AM IF
FM IF1
FM IF2
CONTROL
AM-RF
FM-RF
RF-GND
FM-OSC.
AM-OSC.
Vcc1
I-TUNE
VCO
AF-Out
MPX-IN
FM Frontend
AM OSC
FM MIXER
FM OSC
Pre-scaler
Multi-plexer
AM DET
FM DET
STABILIZER
Charge Pump
7101 TEA5757 z_TEA5759
STEREO DECODER
Mono/Stereo
AFC
XTAL OSC.
Write Enable
DATA
CLOCK
Dig.GND
Vdd
Vcc2
LPF
MUTE
left
right
PILOT FILTER
IF GND
FM-Demod.
AFC-
AFC+
Fieldstrength Indic.
P1
P0
T037
T032
2161 x 100n
2163 x 100n
Programmable Output Ports
VCO
3142 100k
3141 56k
T040
T012
2126 330p
4103
2127 220n
2131 470n
3145 2k2
2132 470n
2133 1u
2138 2u2
5119
2168 82p
2139 15p
5120
3140 150R
DISCRIMINATOR
3140 and 5120 provisional as alternative
T041
T042
CDA10.7MG61KA
2164 (2140) 470n
2140 exchanged by 2164 (SMD type 0805) from layout stage 3317.9 onwards respectively 3103 303 3380.1 and 3103 308 3396.1
T016
T017
2141 100n
2142 100n
3171 330R
3147 z 3M3
3178 z 3M3
7125 z BC848C
3179 z 1M
Vcc1
7103 r BC858C
3143 r 2k2
3144 r 1k
MPX to 1121
3176 r 1k
buffer amplifier
2146 220p
2147 220p
2148 22n
5121 75KHz
3169 150k
2167 12p
2166 1n
2145 220p
3170 100k
3157 100k
3158 470R
7111 BC848C
3156 100k
6120 1N4148
version detection
3161 470R
3160 470R
3159 470R
T020
T021
T022
T023
MPX from 3144
1121 r
GND
MPX
1126
enable
data
clock
stereo
stereo 0.5V mono 4.9V
to/from CONTROL BOARD
5V
150kHz, 50mVpp
0V
stereo
mono
stereo
T024
T025
T026
T027
1124
left
GND
right
Vcc
to/from COMBI BOARD / Source Selector part
3167 220R
T018
3155 470R
2144 10u
T045
3154 150R
6107 BZX79-C11
3146 22R
3177 10k
2143 22u
3152 470R
3153 470R
1130 z
1131 z
T030
T031
V+
stereo
STSIG
VCO-kill
Low=AM mono
T033
R-out
T034
L-out
T035
L-FM
T036
R-FM
+FM
T038
GND
T039
AM-IF
2137 x 220n
2135 x 220n
2136 15n_y22n
2134 15n_y22n
to/from AM-stereo module
AM-OSCILLATOR
T011
6105
HN1V02H
4106
5123 MW
5122 W LW
3132 47R
4108
9117 u
2120 22p w_27p
2158 10p_w
2125 560p
3134 220k z_33k
2123 w 390p
2122 w 3n3
2160 u 22n
7124 w BC848C
3137 w 22k
MW=high
Vdd
3125 w 10k
3123 w 4k7
7109 w BC858B
3180 w 22k provisional
LW=high
3128 w 2k2
7122 w BC848C
6105
HN1V02H
Chip jumper
41..
Signal path
FM
AM
MPX (Audio Frequency)
AF - left/right
Vdc FM mode stereo
Vdc MW mode
Vdc LW mode
EVM
Voltages measured while set is tuned to a strong transmitter
ECO5 systems, discr.coil, 240698

VERSION PROGRAMMING COMPONENTS	6120	3156	3157	3170	remark
/00 FM/MW/LW	x	-	-	-	7111 not mounted
/00 FM/MW/LW/SW-Eu	-	-	-	-	
/01 FM/MW-Stereo	-	-	x	-	SW
/01 FM/MW	-	x	-	x	
/01 FM/MW/SW-Ov	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FM/MW-Stereo	-	-	x	-	SW
/14 FM-OIRT/MW/LW	x	-	x	x	
/14 FM-OIRT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/.. FM/MW/2xSW	-	-	x	x	
/15 FM/MW/SW-Eu	-	x	x	x	

x = component mounted

SW = Software initialisation

r....for RDS version only
s...for East European version (/14/34) only
t....for Japanese version (/06/26) only
u...for 2-band (FM/AM) version only
v...for SW-version 3.9-12.1MHz only
w...for LW only
x....not for all versions
y....for USA version (/17/37) only
z....for AM-STEREO (/06/13/26/33) versions only

1101	A 1
1102	B 2
1103	D 2
1121	E20
1124	G20
1126	E20
1130	I20
1131	I20
2101	C 6
2102	G 7
2103	D 9
2104	B 6
2106	F 5
2107	G 6
2108	G 3
2109	G 3
2111	C13
2120	L11
2122	N11
2123	M11
2125	M11
2126	G 9
2127	G10
2128	C11
2129	C 9
2130	H17
2131	I10
2132	I10
2133	H11
2134	J17
2135	J18
2136	J17
2137	J18
2138	H12
2139	H13
2140	H14
2141	H14
2142	H14
2143	I17
2144	H17
2145	G16
2146	F15
2147	F16
2148	F16
2149	C15
2150	B13
2152	F 7
2153	E 8
2154	E 7
2155	D 8
2158	M11
2159	F 9
2160	M12
2161	D16
2163	E16
2164	H14
2165	C 9
2166	G16
2167	F16
2168	I 13
3101	E 7
3102	E 7
3103	C 8
3104	B11
3105	C 7
3108	E 3
3109	F 2
3110	F 6
3113	C13
3119	B13
3120	C 6
3123	M 7
3125	M 6
3128	M 8
3132	L 9
3134	M12
3137	M13
3140	I13
3141	G10
3142	G 9
3143	I10
3144	I10
3145	H10
3146	I17
3147	I15
3152	H18
3153	H19
3154	H18
3155	H17
3156	G17
3157	F17
3158	F18
3159	F18
3160	E18
3161	E18
3167	G18
3169	G15
3170	F17
3171	H15
3175	B16
3176	J 9
3177	I18
3178	I15
3179	I16
3180	M7
4101	G 5
4102	F 5
4103	G 9
4104	B13
4105	B11
4106	K12
4108	L 9
5102	E 4
5103	F 4
5109	B13
5110	B14
5111	A13
5112	A15
5113	B12
5114	C16
5119	I 12
5120	H13
5121	F15
5122	M11
5123	L11
5130	E 8
5131	D 8
6103	C 2
6104	C 3
6105	K12
6105	E 6
6106	C 6
6107	H17
6120	G16
6130	E 7
6131	D 7
7101	G11
7102	D 8
7103	I 9
7104	E 3
7105	F 2
7109	M 7
7111	F18
7119	B13
7122	M 9
7124	M13
7125	I16
9100	B 4
9101	C 6
9117	L10
9128	A 4

ELECTRICAL PARTSLIST *TUNER ECO5*

MISCELLANEOUS

1101	4822 267 31505	SOCKET 2-POLE CLICKFIT, 300Ω	only for /17
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not for /17

CAPACITORS

2101 ©	5322 122 32531	100pF	5%	50V	not for /17
2101 ©	5322 122 32452	47pF	5%	63V	only for /17
2102 ©	4822 122 33177	10nF	20%	50V	
2103 ©	5322 122 34123	1nF	10%	50V	
2104	4822 122 33195	100pF	10%	50V	
2106	4822 125 60101	3-11pF	TRIMCAP.		
2107	4822 121 51319	1µF	20%	50V	
2120 ©	5322 122 32658	22pF	5%	50V	
2125	4822 121 51381	560pF	1%	400V	
2126 ©	5322 122 31863	330pF	5%	50V	
2127 ©	4822 126 13473	220nF	20%	50V	
2128	4822 124 41579	10µF	20%	50V	
2129	4822 124 41584	100µF	20%	10V	
2130	4822 126 11585	22nF	20%	50V	
2131 ©	4822 126 13482	470nF	20%	16V	
2132 ©	4822 126 13482	470nF	20%	16V	
2133	4822 124 40242	1µF	20%	63V	
2134 ©	4822 126 13188	15nF	5%	63V	not for /17
2134 ©	5322 122 32654	22nF	10%	63V	only for /17
2135	4822 124 40746	0,22µF	20%	63V	
2136 ©	4822 126 13188	15nF	5%	63V	not for /17
2136 ©	5322 122 32654	22nF	10%	63V	only for /17
2137	4822 124 40746	0,22µF	20%	63V	
2138	4822 124 41576	2,2µF	20%	50V	
2139 ©	4822 126 14236	15pF	5%	50V	
2141 ©	4822 126 10002	100nF	20%	50V	
2142 ©	4822 126 10002	100nF	20%	50V	
2143 ©	4822 126 13473	220nF	20%	50V	
2144	4822 124 40242	1µF	20%	63V	
2145 ©	4822 122 33575	220pF	5%	50V	
2146 ©	4822 122 33575	220pF	5%	50V	
2147 ©	4822 122 33575	220pF	5%	50V	
2148	4822 126 11585	22nF	20%	50V	
2149 ©	5322 122 32654	22nF	10%	63V	
2150 ©	4822 122 31947	100nF	20%	50V	
2152 ©	4822 126 12105	33nF	5%	63V	not for /14
2152 ©	5322 116 80853	560pF	5%	63V	only for /14
2153 ©	4822 122 32139	12pF	5%	63V	only for /14
2153 ©	4822 122 32504	15pF	5%	50V	not for /14
2155	4822 125 60101	3-11pF	TRIMCAP.		
2159 ©	5322 122 32659	33pF	5%	50V	
2160 ©	5322 122 32654	22nF	10%	63V	
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 10002	100nF	20%	50V	
2166 ©	5322 122 34123	1nF	10%	50V	
2167 ©	4822 122 32139	12pF	5%	63V	
2168 ©	4822 126 13695	82pF	1%	63V	

RESISTORS

3101 ©	4822 051 20333	33kΩ	5%	0,1W	not for /14
3101 ©	4822 051 20562	5,6kΩ	5%	0,1W	only for /14
3102 ©	4822 051 20104	100kΩ	5%	0,1W	
3103 ©	4822 117 10965	18kΩ	2%	0,1W	
3104 ©	4822 117 11448	180Ω	10%	0,1W	
3105	4822 116 83872	220Ω	5%	0,5W	
3110	4822 116 52195	47Ω	5%	0,5W	
3120 ©	4822 051 20008	CHIP JUMPER 0805			
3132	4822 116 52195	47Ω	5%	0,5W	
3134 ©	4822 051 20224	220kΩ	5%	0,1W	
3141 ©	4822 117 11148	56kΩ	1%	0,1W	

RESISTORS

3142	4822 100 11163	100kΩ TRIMPOT LIN.			
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3146 ©	4822 051 20229	22Ω	5%	0,1W	
3152	4822 116 83883	470Ω	5%	0,16W	
3153 ©	4822 051 20471	470Ω	5%	0,1W	
3154	4822 116 83868	150Ω	5%	0,5W	
3155 ©	4822 051 20471	470Ω	5%	0,1W	
3156 ©	4822 051 20104	100kΩ	5%	0,1W	not for /14/17
3157	4822 116 52234	100kΩ	5%	0,5W	only for /14
3158	4822 116 83883	470Ω	5%	0,16W	
3159	4822 116 83883	470Ω	5%	0,16W	
3160	4822 116 83883	470Ω	5%	0,16W	
3161	4822 116 83883	470Ω	5%	0,16W	
3167 ©	4822 117 11503	220Ω	5%	0,1W	
3169 ©	4822 051 20154	150kΩ	5%	0,1W	
3170	4822 116 52234	100kΩ	5%	0,5W	not for /14
3171	4822 116 52219	330Ω	5%	0,5W	
4101 ©	4822 051 20008	CHIP JUMPER 0805			
4102 ©	4822 051 20008	CHIP JUMPER 0805			
4103 ©	4822 051 20008	CHIP JUMPER 0805			
4104 ©	4822 051 20008	CHIP JUMPER 0805			
4105 ©	4822 051 20008	CHIP JUMPER 0805			
4106 ©	4822 051 20008	CHIP JUMPER 0805			
4108 ©	4822 051 20008	CHIP JUMPER 0805			
4111 ©	4822 051 20008	CHIP JUMPER 0805			
4120 ©	4822 051 20008	CHIP JUMPER 0805			
4150 ©	4822 051 10008	CHIP JUMPER 1206			
4152 ©	4822 051 10008	CHIP JUMPER 1206			
4153 ©	4822 051 10008	CHIP JUMPER 1206			
4154 ©	4822 051 10008	CHIP JUMPER 1206			
4157 ©	4822 051 10008	CHIP JUMPER 1206			
4158 ©	4822 051 10008	CHIP JUMPER 1206			
4159 ©	4822 051 10008	CHIP JUMPER 1206			

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHZ
5110	4822 242 70665	FM-IF FILTER 10,7MHZ
5111	4822 158 60511	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz
5114	4822 157 70302	AM-IF FILTER 450kHz
5119	4822 157 11443	DISCRIMINATOR COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	4822 157 60517	RF-COIL AM
5130	4822 156 30947	RF COIL 1,5 TURNS
5131	4822 156 30947	RF COIL 1,5 TURNS

DIODES

6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105 ©	4822 130 83075	HN1V02H	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-C11	
6120	4822 130 30621	1N4148	only for /14/17
6130 ©	4822 130 82833	1SV228	
6131 ©	4822 130 82833	1SV228	

TRANSISTORS

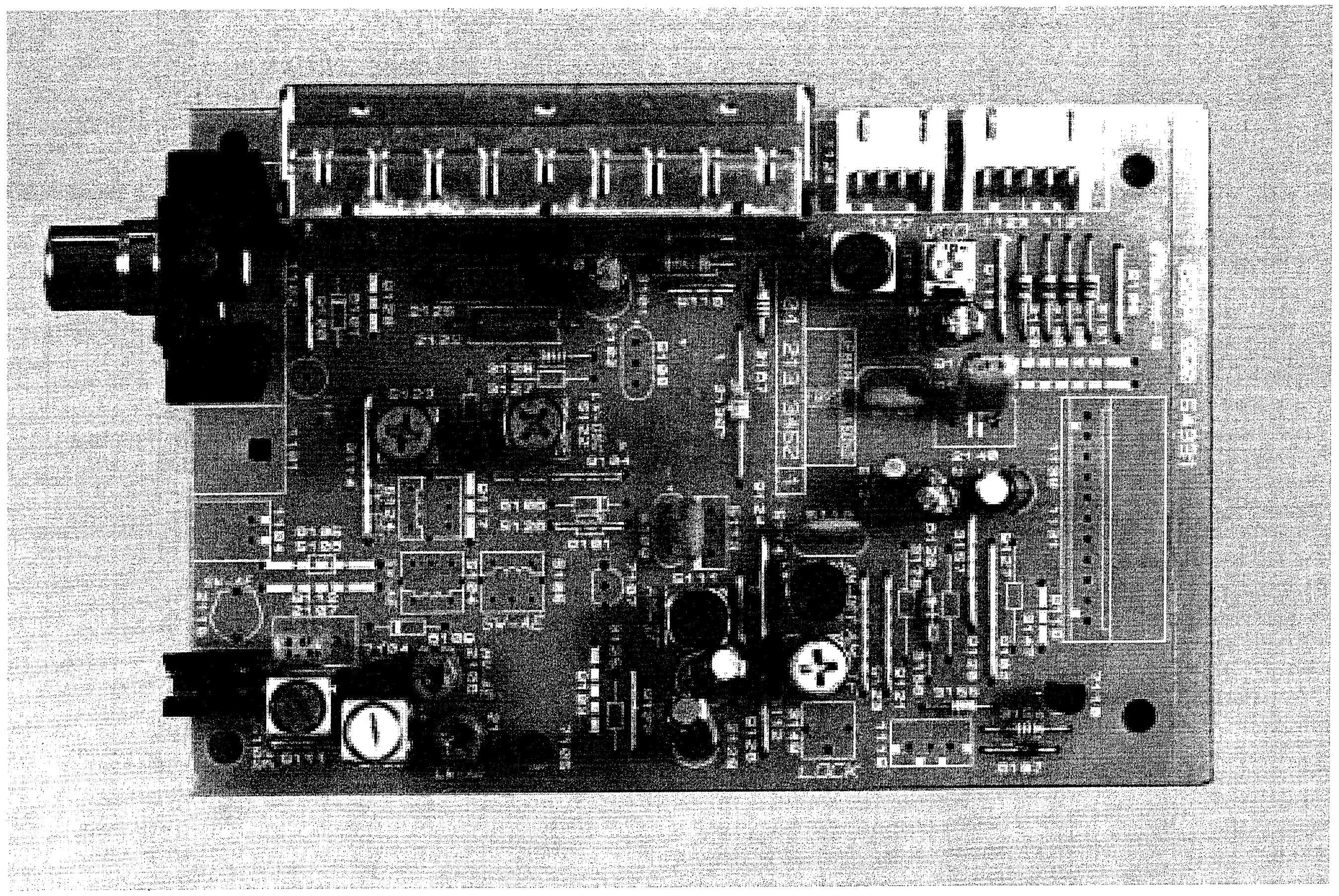
7102	4822 130 60093	2SA838B
7111 ©	5322 130 42136	BC848C

INTEGRATED CIRCUITS

7101 ©	4822 209 90924	TEA5757H/V1, RADIO IC

ELECTRICAL PARTS LIST *TUNER ECO5 for /06 (Japanese version)*

1102	4822 265 20598	SOCKET COAX YKD31-0468 75Ω
1130	4822 267 10749	CONNECTOR S11B-XH-A (11P)
2111	5322 122 32531	100pF 5%NP0 50V
2153	5322 122 33063	2.2pF 5% NP0 50V
3113	4822 051 10102	1kΩ 2% 0,25W
3119	4822 051 20331	330Ω 5% 0,1W
3134	4822 051 20223	22kΩ 5% 0,1W
3147	4822 111 50499	3.3MΩ 5% 0,2W
3155	4822 051 20101	100Ω 5% 0,1W
3175	4822 117 12955	2.7kΩ 1% 0,1W 0805
3177	4822 117 10833	10kΩ 1% 0,1W
3178	4822 051 20335	3.3MΩ 5% 0,1W
3179	4822 051 20105	1MΩ 5% 0,1W
4161	4822 051 20008	CHIP JUMPER. 0805
5113	4822 242 80989	FILTER SER. SFU450B 457kHz
5130	4822 157 70033	COIL-FM OSC
7101	*HC104790R	TEA5759H/V1 RADIO IC
7119	4822 130 60163	2SC1047C
7125	5322 130 42755	BC847C BC848C



TUNER 95 BOARD

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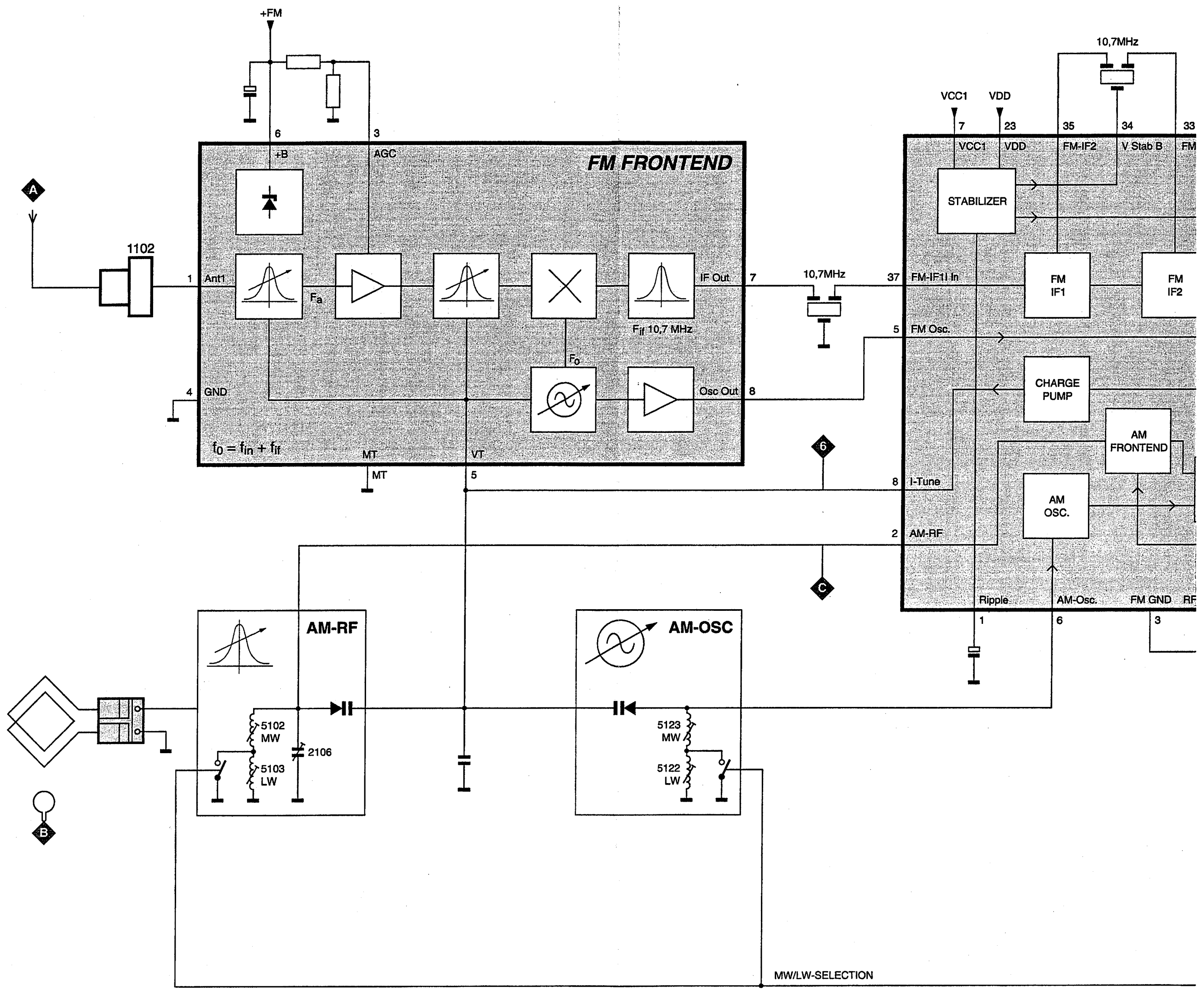
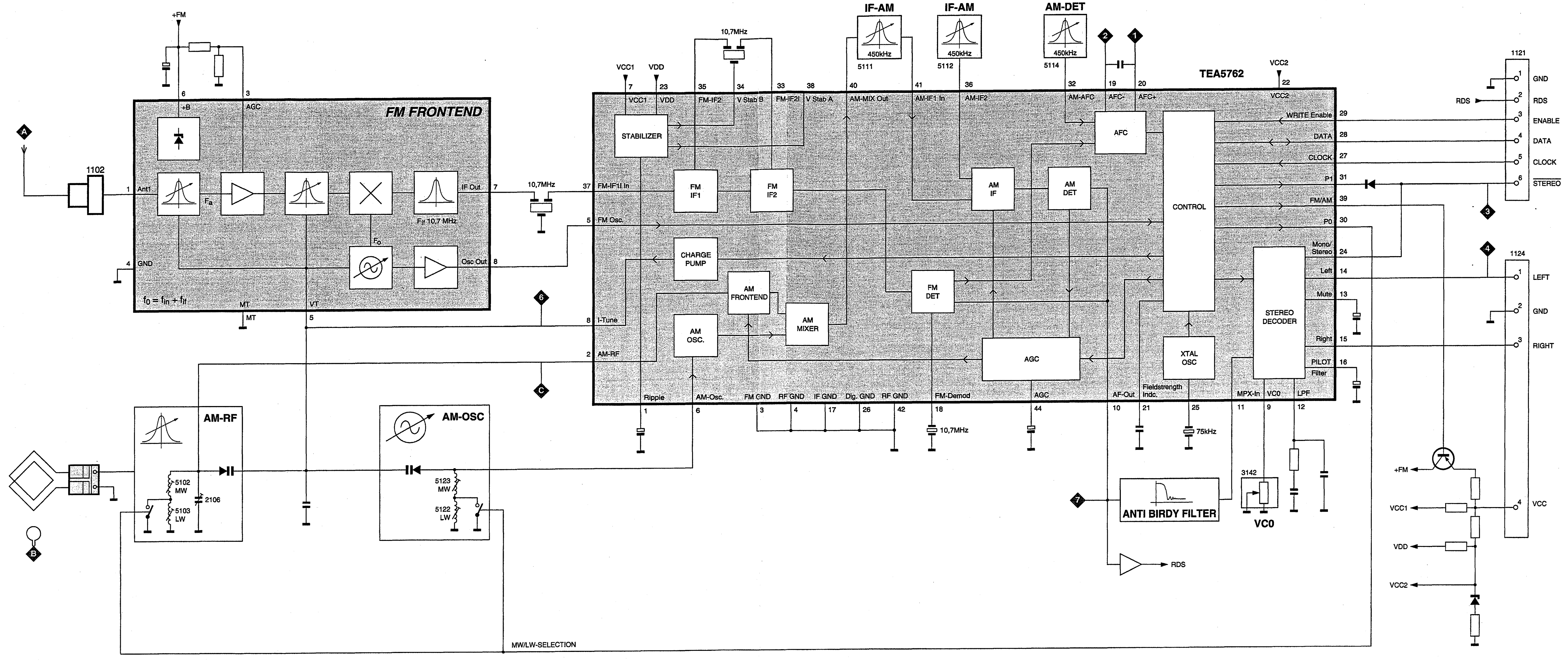
Adjustmant table 7D-2
Component layout...7D-2
Circuit diagram...7D-3
Partslist 7D-4

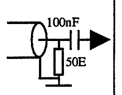
BLOCKDIAGRAM


+FM
6
3
+B
AGC
FM FRONTEND
A
1102
1
Ant1
Fa
IF Out
7
Fif 10,7 MHz
Fo
4
GND
Osc Out
8
f0 = fin + fif
MT
VT
5
10,7MHz
37
FM-IF1 In
5
FM Osc.
8
I-Tune
2
AM-RF
VCC1
VDD
7
23
35
34
33
VCC1
VDD
FM-IF2
V Stab B
10,7MHz
STABILIZER
FM IF1
FM IF2
CHARGE PUMP
AM FRONTEND
AM OSC.
Ripple
AM-Osc.
FM GND
1
6
3
6
C
AM-RF
5102 MW
5103 LW
2106
AM-OSC
5123 MW
5122 LW
B
MW/LW-SELECTION

BLOCKDIAGRAM


+FM
1102
1 Ant1
6 +B
3 AGC
FM FRONTEND
Fa
IF Out 7
FIf 10,7 MHz
Fo
Osc Out 8
4 GND
f0 = fin + fIf
MT
VT
5
10,7MHz
IF-AM
450kHz
5111
IF-AM
450kHz
5112
AM-DET
450kHz
5114
TEA5762
VCC1
VDD
VCC2
7
23
35
34
33
38
40
41
36
32
19
20
22
STABILIZER
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
37 FM-IF1 In
5 FM Osc.
8 I-Tune
2 AM-RF
FM IF1
FM IF2
AM IF
AM DET
AFC
CONTROL
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
FM DET
AGC
XTAL OSC
STEREO DECODER
WRITE Enable 29
DATA 28
CLOCK 27
P1 31
FM/AM 39
P0 30
Mono/Stereo 24
Left 14
Mute 13
Right 15
PILOT Filter 16
Rippie
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
1
6
3
4
17
26
42
18
44
10
21
25
11
9
12
10,7MHz
75kHz
1121
GND
RDS
ENABLE
DATA
CLOCK
STEREO
1124
LEFT
GND
RIGHT
VCC
A
B
C
1
2
3
4
6
7
AM-RF
5102 MW
5103 LW
2106
AM-OSC
5123 MW
5122 LW
3142
ANTI BIRDY FILTER
VCO
RDS
+FM
VCC1
VDD
VCC2
MW/LW-SELECTION

TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50)			108 MHz	check	◇6	7 ... 9V
87.5 - 108 MHz			87.5 MHz	check		1.3 ... 2V
MW (9)			1602 kHz	5123		8.3V ± 0.2V
531 - 1602 kHz			531 kHz	check		1V ± 0.4V
LW (3)			279 kHz	5122		8.3V ± 0.2V
153 - 279 kHz			153 kHz	check		1V ± 0.4V
FM – DETECTION						
FM	98 MHz 1mV continuous wave *short pin 21 (IC7101) to ground*	◇A	98 MHz	5107	◇1 ◇2	0mV ± 3mV
FM – VCO						
FM	98 MHz 1 mV continuous wave	◇A	98 MHz	3142	◇3	152kHz ± 1 kHz
DISTORTION						
FM	98 MHz 1 mV 90 % L + 9 % pilot mod = 1kHz	◇A	98MHz	mixcoil inside Tuner 1110	◇4	Distortion minimum
AM – IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal		MW	5111	◇7	symmetrical and max. height ↕
				5112		
	450kHz continuous wave	◇C		5114	◇1 ◇2	0mV ± 2mV
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM 1494 kHz	◇B *	558kHz	5102	◇	MAX ↕
			1494kHz 7	2106		
LW	198kHz mod = 1kHz 30 % AM		198kHz	5103		MAX

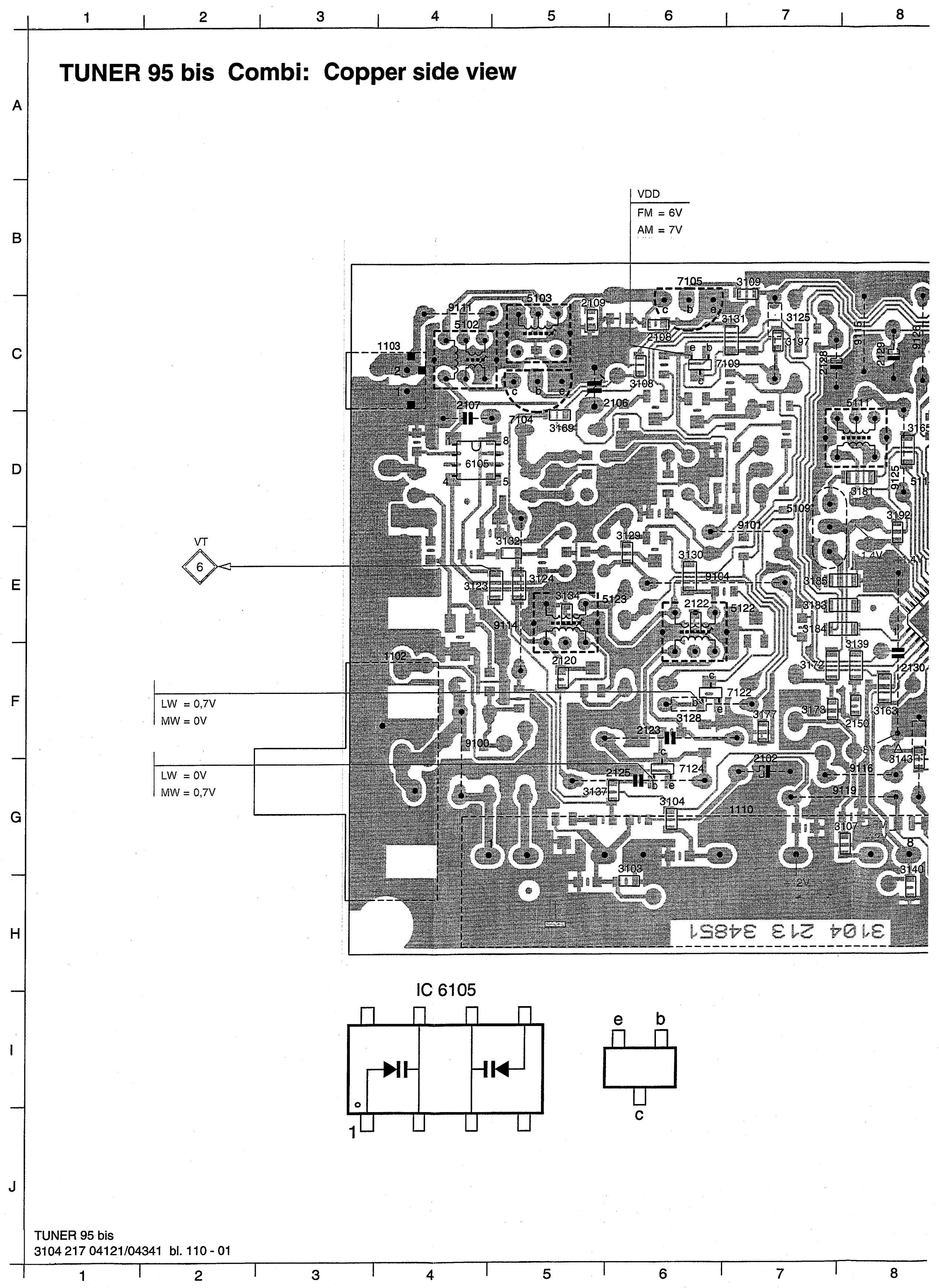
adjtable for 3104 217 04121/04341

* Signal send via a frame antenna
(..) = tuning grid in kHz

↕ repeat

1102	F4	2107	C4	2128	C7	2136	G10	2145	G11	2161	E9	3124	E5	3137	G5	3145	F9	3158	G11	3167	F8
1103	C3	2108	C6	2129	C8	2137	E11	2147	G11	2162	C11	3125	C7	3138	D9	3146	B10	3159	G11	3169	D5
1110	G7	2109	C5	2130	F8	2138	E10	2148	E9	3103	H6	3128	F6	3139	F8	3150	C11	3160	G11	3171	D11
1121	H11	2120	F5	2131	F9	2140	F10	2150	F8	3104	G6	3129	E6	3140	H8	3151	C10	3161	G11	3172	F7
1124	H9	2122	E6	2132	F9	2141	E10	2151	F9	3107	G7	3130	E6	3141	G9	3152	G9	3162	D9	3173	F7
1126	G10	2123	F6	2133	F10	2142	E9	2152	F9	3108	C6	3131	C6	3142	G10	3153	G9	3163	F8	3176	D9
2102	G7	2125	G5	2134	G10	2143	C10	2158	D10	3109	B7	3132	E5	3143	G8	3154	C10	3164	C11	3177	F7
2106	C5	2127	F9	2135	G11	2144	E10	2160	E9	3123	E4	3134	E5	3144	H8	3155	C10	3165	D8	3181	D8

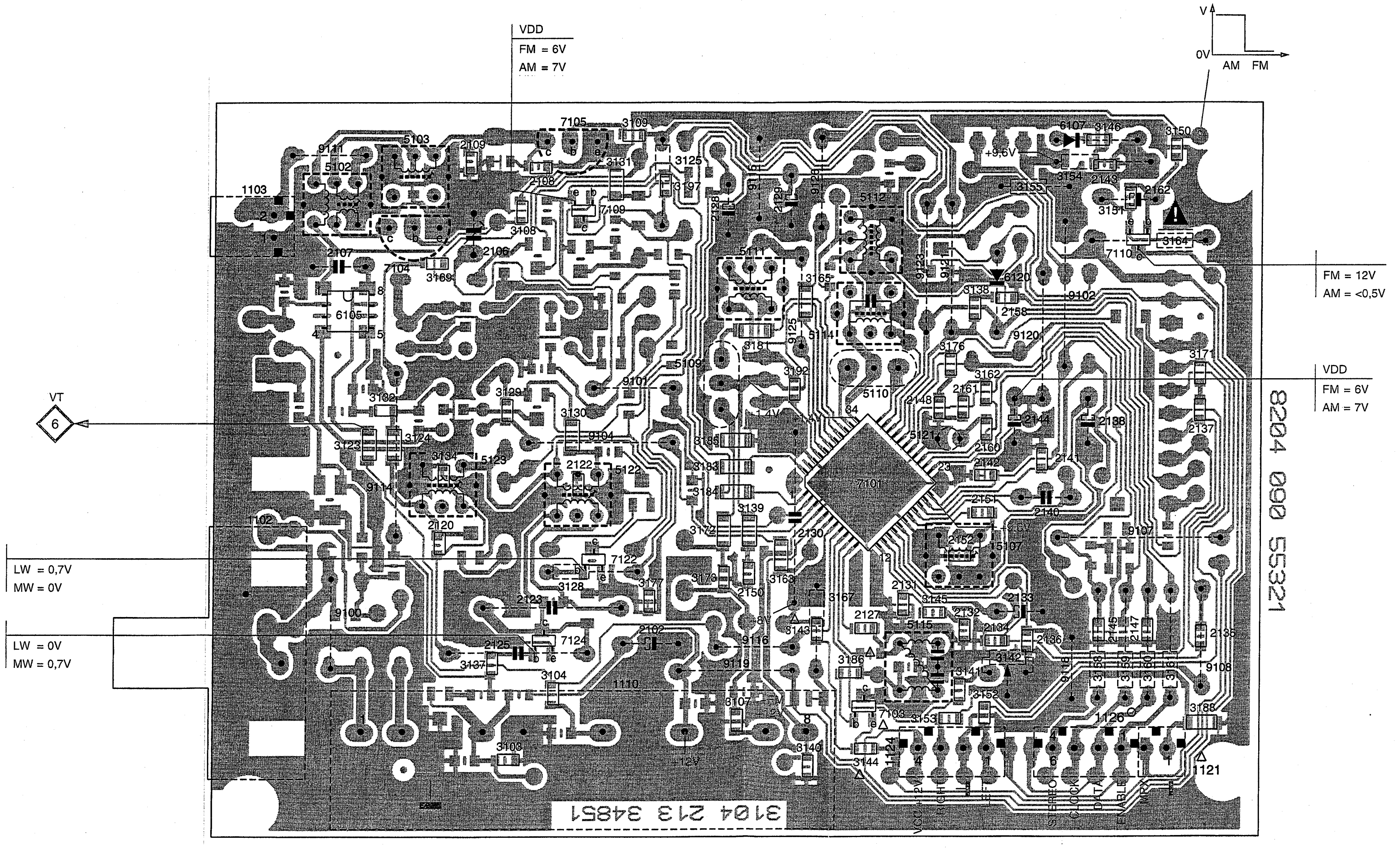
TUNER 95 bis Combi: Copper side view

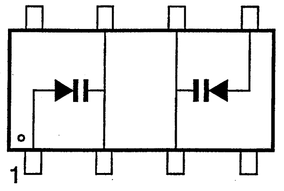

1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
VDD
FM = 6V
AM = 7V
VT
6
LW = 0,7V
MW = 0V
LW = 0V
MW = 0,7V
1103
5103
5102
2109
7105
3109
3131
3125
2107
7104
3169
2106
3108
6105
3102
3124
3123
3134
5123
3129
3130
9101
5109
2122
5122
2120
1102
3128
7122
3177
2123
9100
2125
7124
3137
3104
2102
1110
3107
3108
3140
3104 213 34851
IC 6105
1
e
b
c

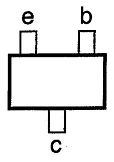
TUNER 95 bis
3104 217 04121/04341 bl. 110 - 01

1102	F4	2107	C4	2128	C7	2136	G10	2145	G11	2161	E9	3124	E5	3137	G5	3145	F9	3158	G11	3167	F8	3183	E7	5103	C5	5121	E9	7104	D5	9102	D10	9118	G10
1103	C3	2108	C6	2129	C8	2137	E11	2147	G11	2162	C11	3125	C7	3138	D9	3146	B10	3159	G11	3169	D5	3184	E7	5107	F10	5122	E7	7105	B6	9104	E6	9119	G7
1110	G7	2109	C5	2130	F8	2138	E10	2148	E9	3103	H6	3128	F6	3139	F8	3150	C11	3160	G11	3171	D11	3185	E7	5109	D7	5123	E5	7109	C6	9107	F11	9120	D10
1121	H11	2120	F5	2131	F9	2140	F10	2150	F8	3104	G6	3129	E6	3140	H8	3151	C10	3161	G11	3172	F7	3186	G8	5110	E9	6105	D4	7110	D11	9108	G11	9121	D9
1124	H9	2122	E6	2132	F9	2141	E10	2151	F9	3107	G7	3130	E6	3141	G9	3152	G9	3162	D9	3173	F7	3188	G11	5111	C8	6107	B10	7122	F7	9111	C4	9123	D9
1126	G10	2123	F6	2133	F10	2142	E9	2152	F9	3108	C6	3131	C6	3142	G10	3153	G9	3163	F8	3176	D9	3192	D8	5112	C9	6120	D10	7124	G6	9114	E5	9125	D8
2102	G7	2125	G5	2134	G10	2143	C10	2158	D10	3109	B7	3132	E5	3143	G8	3154	C10	3164	C11	3177	F7	3197	C7	5114	D8	7101	E9	9100	F4	9115	C8	9126	C8
2106	C5	2127	F9	2135	G11	2144	E10	2160	E9	3123	E4	3134	E5	3144	H8	3155	C10	3165	D8	3181	D8	5102	C4	5115	G9	7103	G9	9101	E7	9116	G8		

TUNER 95 bis Combi: Copper side view


VDD
FM = 6V
AM = 7V
V
0V
AM FM
FM = 12V
AM = <0,5V
VDD
FM = 6V
AM = 7V
VT
6
LW = 0,7V
MW = 0V
LW = 0V
MW = 0,7V
8204 090 55321
3104 213 34851
1103
9111
5102
5103
2109
7105
3109
3131
3125
3197
2108
7109
3108
2106
2107
7104
3169
6105
5111
5112
6107
3146
3150
3155
3154
2148
2162
3151
3164
7110
3138
6120
2158
9102
9120
3176
3162
2161
2144
2188
2137
3171
7101
5110
5109
9101
3192
3181
3185
5114
3129
3130
9104
3182
3124
3123
3134
5123
2122
5122
9114
2120
3183
3184
3139
2130
3172
3173
3163
2150
3167
7122
3128
3177
2123
9100
2125
7124
3137
3104
2102
1110
9116
9119
3143
3107
3140
3186
2127
5115
2131
2132
2133
2134
2136
3141
3142
3152
3153
7103
3144
1124
1126
3188
9108
2135
1121
2140
2152
5107
9107
2141
2142
2160
3103
+9,5V
12V


IC 6105



△ only in RDS version (04121)

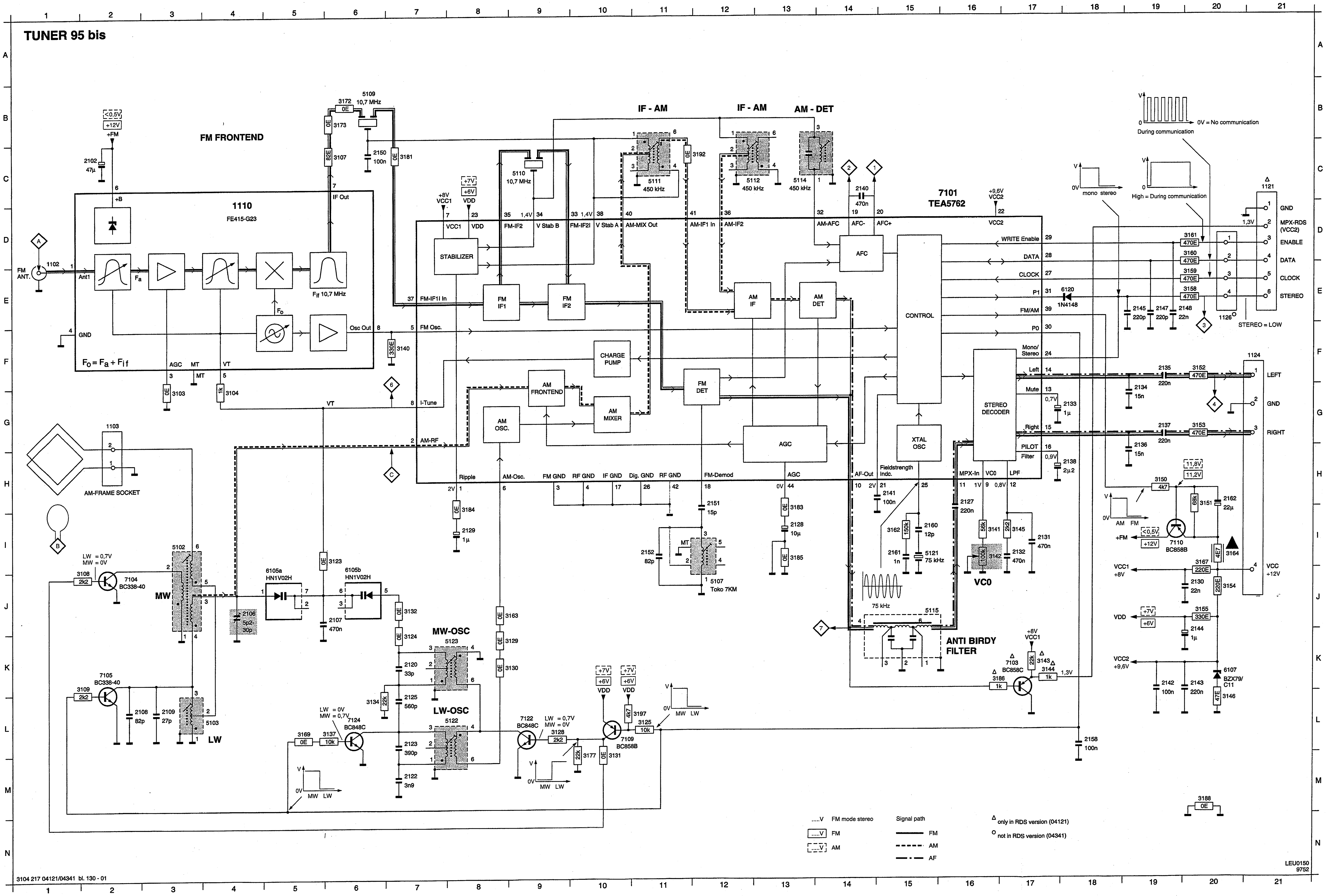
○ not in RDS version (04341)

TUNER 95 bis
3104 217 04121/04341 bl. 110 - 01

LEU0149
9751

Ref.	Pos.
1102	D1
1103	G2
1110	D4
1121	C21
1124	F21
1126	E20
2102	C2
2106	J4
2107	J6
2108	L2
2109	L3
2120	K7
2122	M7
2123	L7
2125	L7
2127	H16
2128	I13
2129	I8
2130	J20
2131	I17
2132	I17
2133	G18
2134	G19
2135	F19
2136	H19
2137	G19
2138	H18
2140	C14
2141	H15
2142	K19
2143	K20
2144	K20
2145	E19
2147	E19
2148	E19
2150	C6
2151	H12
2152	I11
2158	L18
2160	I15
2161	I15
2162	H20
3103	G3
3104	G4
3107	C6
3108	J1
3109	K1
3123	I6
3124	K7
3125	L11
3128	L9
3129	K8
3130	K8
3131	M10
3132	J7
3134	L6
3137	L5
3140	F7
3141	I16
3142	I16
3143	K17
3144	K17
3145	I17
3146	L20
3150	H19
3151	I20
3152	F20
3153	G20
3154	J20
3155	J20
3158	E19
3159	E19
3160	D19
3161	D19
3162	I15
3163	J8
3164	I20
3167	I20
3169	L5
3172	B6
3173	B6
3177	M10
3181	C7
3183	I13
3184	I8
3185	I13
3186	K16
3188	M20
3192	C12
3197	L11
5102	I3
5103	L4
5107	J12
5109	B6
5110	C9
5111	C11
5112	C12
5114	C13
5115	J15
5121	I15
5122	L7
5123	K7
6105a	I5
6105b	I6
6107	K20
6120	E17
7101	C15
7103	K17
7104	J2
7105	K2
7109	L10
7110	I19
7122	L9
7124	L6

TUNER 95 bis


FM FRONTEND
1110
FE415-G23
FM ANT.
Ant1
GND
IF Out
Osc Out
AGC
MT
VT
$F_o = F_a + F_{if}$
F_{if} 10,7 MHz
5109 10,7 MHz
5110 10,7 MHz
IF - AM
IF - AM
AM - DET
5111 450 kHz
5112 450 kHz
5114 450 kHz
7101
TEA5762
STABILIZER
FM IF1
FM IF2
FM DET
AM IF
AM DET
AFC
CONTROL
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
AGC
XTAL OSC
STEREO DECODER
VCC1
VDD
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
VCC2
WRITE Enable
DATA
CLOCK
P1
FM/AM
P0
Mono/Stereo
Left
Mute
Right
PILOT
Filter
FM-IF1I In
FM Osc.
I-Tune
AM-RF
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
VC0
75 kHz
ANTI BIRDY FILTER
5115
1103
AM-FRAME SOCKET
MW
LW
5102
5103
7104 BC338-40
7105 BC338-40
6105a HN1V02H
6105b HN1V02H
MW-OSC
5123
LW-OSC
5122
7124 BC848C
7122 BC848C
7109 BC858B
7110 BC858B
7103 BC858C
6120 1N4148
6107 BZX79/C11
5107 Toko 7KM
1121
GND
MPX-RDS (VCC2)
ENABLE
DATA
CLOCK
STEREO
STEREO = LOW
1124
LEFT
GND
RIGHT
VCC +12V
VCC1 +8V
VDD
VCC2 +9,6V
+FM
0V = No communication
During communication
mono stereo
High = During communication
MW LW
AM FM
......V FM mode stereo
V FM
V AM
Signal path
FM
AM
AF
Δ only in RDS version (04121)
○ not in RDS version (04341)

3104 217 04121/04341 bl. 130 - 01

LEU0150
9752

PCS 96 922

MARA-00711 / DRUCK 17

MISCELLANEOUS

1102	4822 267 10283	Socket Coaxial IEC 75R
1103	4822 265 31184	JST Connector 2 pin
1110	4822 210 10739	Frontend Assembly FE415-G23

CAPACITORS

2102	4822 124 40433	47µF 20% 25V
2106	4822 125 60102	Trimmer 5,2-30pF 100V
2107	4822 121 51252	470nF 5% 63V
2108	4822 126 13695	82pF 1% 63V
2109	4822 126 13691	27pF 1% 63V
2120	5322 122 32659	33pF 5% 50V
2122	5322 126 10465	3,9nF 10% 63V
2125	4822 121 10578	560P 1% 630V
2127	4822 122 32927	220nF +80/-20% 50V
2128	4822 124 41579	10µF 20% 50V
2129	4822 124 40242	1µF 20% 63V
2130	4822 126 11585	22nF +80/-20% 25V
2131	4822 122 33325	470nF 16V
2132	4822 122 33325	470nF 16V
2133	4822 124 40242	1µF 20% 63V
2134	4822 126 13188	15nF 5% 63V
2135	4822 122 32927	220nF +80/-20% 50V
2136	4822 126 13188	15nF 5% 63V
2137	4822 122 32927	220nF +80/-20% 50V
2138	4822 124 41576	2,2µF 20% 50V
2140	4822 121 51252	470nF 5% 63V
2141	4822 122 31947	100nF 20% 63V
2142	4822 122 31947	100nF 20% 63V
2143	4822 122 32927	220nF +80/-20% 50V
2144	4822 124 40242	1µF 20% 63V
2145	4822 122 33575	220pF 5% 50V
2147	4822 122 33575	220pF 5% 50V
2148	4822 122 33809	22nF 20% 50V
2150	4822 122 31947	100nF 20% 63V
2151	4822 126 14236	50V 15pF 5%
2152	4822 126 13695	82pF 1% 63V
2158	4822 122 31947	100nF 20% 63V
2160	4822 122 32139	12pF 2% 63V
2161	5322 122 34123	1nF 10% 50V
2162	4822 124 81151	22µF 50V

RESISTORS

3103	4822 051 20008	0R Jumper 0805
3104	4822 051 10102	1k 2% 0,25W
3107	4822 051 20829	82R 5% 0,1W
3108	4822 117 11449	2k2 1% 0,1W
3109	4822 117 11449	2k2 1% 0,1W
3123	4822 051 10008	0R 5% 0,25W
3124	4822 051 10008	0R 5% 0,25W
3125	4822 116 83864	10k 5% 0,5W
3128	4822 116 52256	2k2 5% 0,5W
3129	4822 051 20008	0R Jumper 0805
3130	4822 051 10008	0R 5% 0,25W
3131	4822 051 10008	0R 5% 0,25W
3132	4822 051 20008	0R Jumper 0805
3134	4822 051 20223	22k 5% 0,1W
3137	4822 117 10833	10k 1% 0,1W
3138	4822 051 20008	0R Jumper 0805
3139	4822 051 10008	0R 5% 0,25W
3140	4822 051 20331	330R 5% 0,1W
3141	4822 051 20563	56k 5% 0,1W
3142	4822 100 11163	Trimmer 100k 30% 0,1W
3143	4822 051 20223	22k 5% 0,1W
3144	4822 051 10102	1k 2% 0,25W
3145	4822 117 11449	2k2 1% 0,1W
3146	4822 051 20479	47R 5% 0,1W
3150	4822 051 20472	4k7 5% 0,1W
3151	4822 051 20683	68k 5% 0,1W
3152	4822 051 20471	470R 5% 0,1W
3153	4822 051 20471	470R 5% 0,1W
3154	4822 116 83872	220R 5% 0,5W
3155	4822 116 52219	330R 5% 0,5W
3158	4822 116 83883	470R 5% 0,5W
3159	4822 116 83883	470R 5% 0,5W
3160	4822 116 83883	470R 5% 0,5W
3161	4822 116 83883	470R 5% 0,5W
3162	4822 051 20224	220k 5% 0,1W
3163	4822 051 10008	0R 5% 0,25W
3164	4822 052 10478 ⚠	4R7 5% 0,33W
3165	4822 051 10008	0R 5% 0,25W
3167	4822 116 83872	220R 5% 0,5W
3169	4822 051 20008	0R Jumper 0805
3171	4822 051 20008	0R Jumper 0805
3172	4822 051 10008	0R 5% 0,25W
3173	4822 051 20008	0R Jumper 0805
3176	4822 051 20008	0R Jumper 0805
3177	4822 051 20223	22k 5% 0,1W
3181	4822 051 10008	0R 5% 0,25W
3183	4822 051 10008	0R 5% 0,25W
3184	4822 051 10008	0R 5% 0,25W
3185	4822 051 10008	0R 5% 0,25W
3186	4822 051 10102	1k 2% 0,25W
3188	4822 051 10008	0R 5% 0,25W
3192	4822 051 20008	0R Jumper 0805
3197	4822 051 20472	4k7 5% 0,1W

COILS & FILTERS

5102	4822 157 71634	MW AERIAL
5103	4822 157 71635	LW AERIAL
5107	4822 157 11443	FM Discriminator 10,7MHz
5109	4822 157 71639	Ceram Filter 10,7MHz
5110	4822 242 70665	Ceram Filter 10,7MHz
5111	4822 158 60511	AM-IF Filter 450kHz
5112	4822 157 70302	AM-IF Filter 450kHz
5114	4822 157 70302	AM-IF Filter 450kHz
5115	4822 157 71636	Anti-Birdy Filter
5121	4822 242 10261	X'tal Resonator 75kHz
5122	4822 157 60517	RF Coil AM
5123	4822 157 60517	RF Coil AM

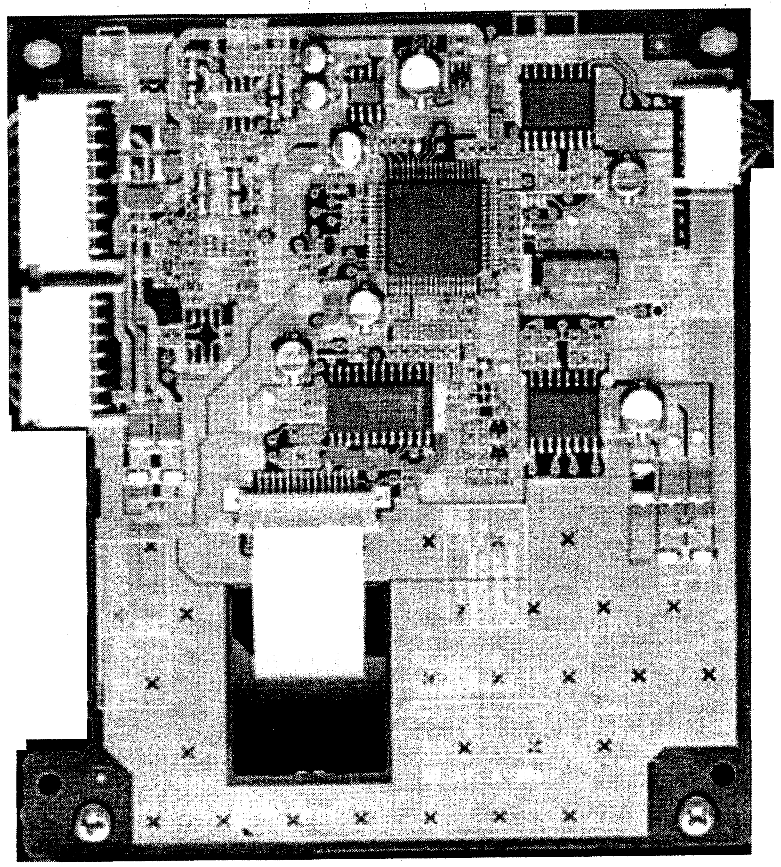
DIODES

6105	4822 130 83075	HN1V02H-B
6107	4822 130 34488	BZX79-B11
6120	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1
7103	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7110	5322 130 41983	BC858B
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

Note: Only the parts mentioned in this list are normal service spare parts.



CD BOARD NAMI 8

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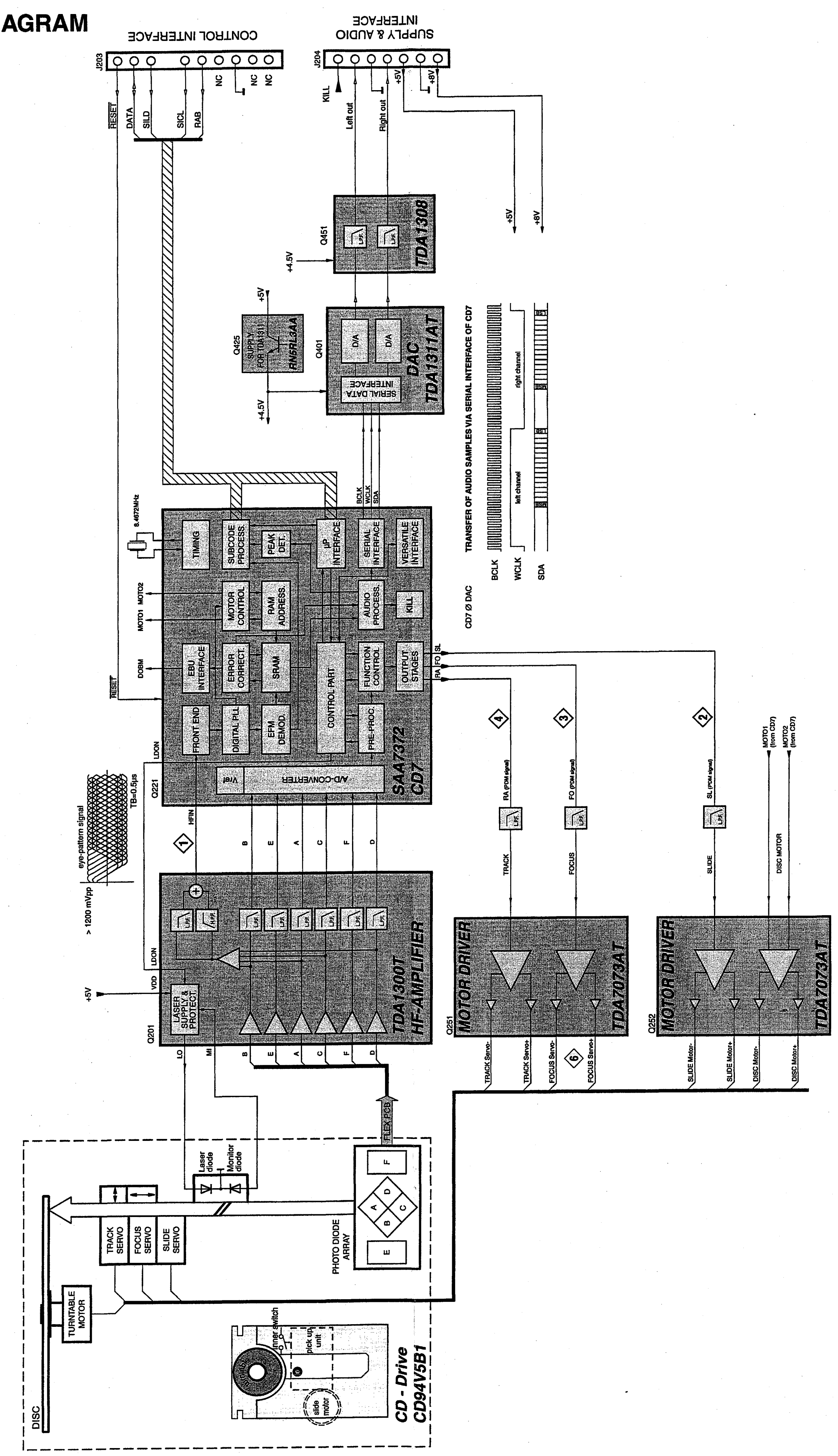
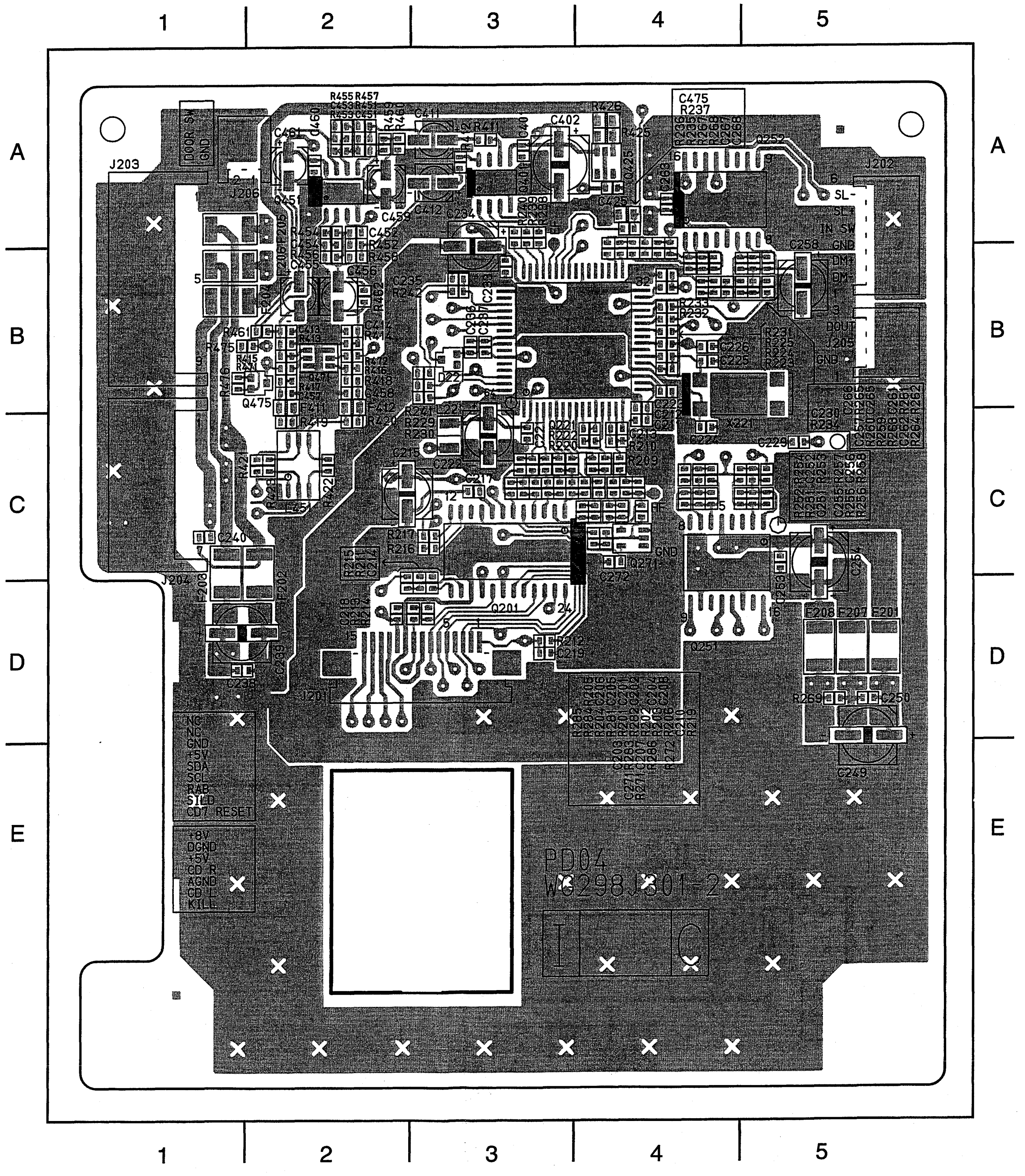
BLOCK DIAGRAM



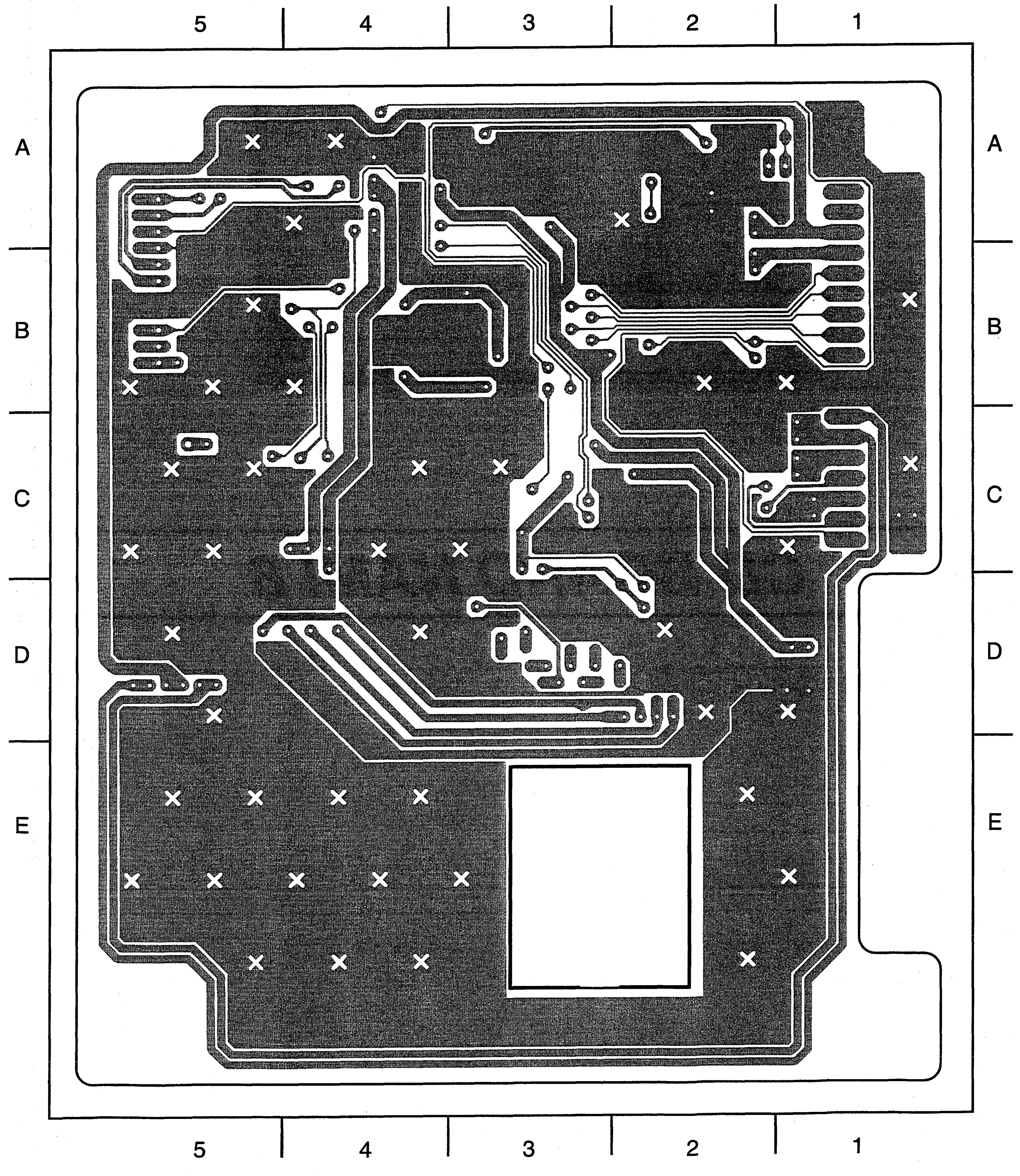
CONTROL INTERFACE
SUPPLY & AUDIO INTERFACE
J203
J204
RESET
DATA
SILD
SICL
RAB
NC
KILL
Left out
Right out
+5V
+8V
TDA1308
Q451
+4.5V
DAC TDA1311AT
Q401
SERIAL DATA INTERFACE
D/A
Q425
RN5RL44A
TRANSFER OF AUDIO SAMPLES VIA SERIAL INTERFACE OF CD7
BCLK
WCLK
SDA
left channel
right channel
CD7 Ø DAC
SAA7372 CD7
Q221
TIMING
SUBCODE PROCESS.
PEAK DET.
µP INTERFACE
SERIAL INTERFACE
VERSATILE INTERFACE
MOTOR CONTROL
RAM ADDRESS
AUDIO PROCESS.
KILL
EBU INTERFACE
ERROR CORRECT.
SRAM
CONTROL PART
FUNCTION CONTROL
OUTPUT STAGES
FRONT END
DIGITAL PLL
EFM DEMOD.
PRE-PROC.
A/D-CONVERTER
Vref
8.4672MHz
MOTO1
MOTO2
DOBM
LDON
HFIN
RA
FO
SL
eye-pattern signal
> 1200 mVpp
TDA1300T HF-AMPLIFIER
LASER SUPPLY & PROTECT.
Q201
VDD
LO
MI
B
E
A
C
F
D
TRACK
FOCUS
SLIDE
DISC MOTOR
MOTOR DRIVER
TDA7073AT
Q251
Q252
TRACK Servo-
TRACK Servo+
FOCUS Servo-
FOCUS Servo+
SLIDE Motor-
SLIDE Motor+
DISC Motor-
DISC Motor+
FLEX PCB
Laser diode
Monitor diode
PHOTO DIODE ARRAY
TRACK SERVO
FOCUS SERVO
SLIDE SERVO
TURNTABLE MOTOR
DISC
inner switch
pick up unit
slide motor
CD - Drive CD94V5B1

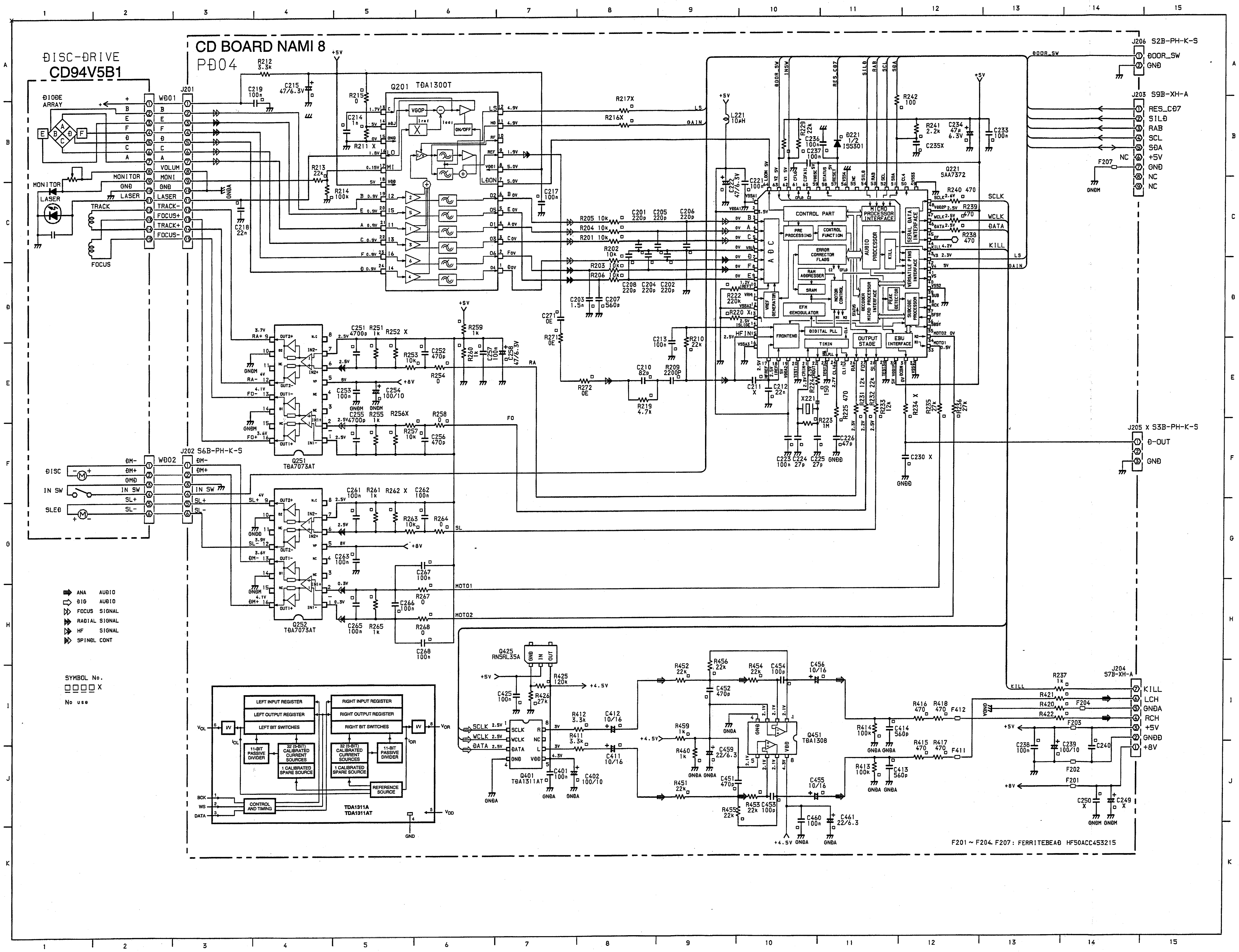
C201 C3
C202 C3
C203 C4
C204 C4
C205 C3
C206 C3
C207 C4
C208 C4
C210 C4
C211 C4
C212 B4
C213 C4
C214 D3
C215 C2
C217 C3
C218 D2
C219 D3
C221 C3
C222 C3
C223 B4
C224 C4
C225 B4
C226 B4
C229 C5
C230 B4
C233 B3
C234 A3
C235 B3
C236 B3
C237 B3
C238 D1
C239 D1
C240 C1
C249 D5
C250 D5
C251 C4
C252 C4
C253 C5
C254 C5
C255 C5
C256 C5
C257 B4
C258 B5
C261 B5
C262 B5
C263 A4
C265 B4
C266 B4
C267 B4
C268 B4
C271 C4
C272 C4
C401 A3
C402 A3
C411 A3
C412 A3
C413 B2
C414 B2
C425 A4
C451 A2
C452 A2
C453 A2
C454 A2
C455 B2
C456 B2
C457 B2
C458 B2
C459 A2
C460 A2
C461 A2
C475 A4
D221 B3
F201 D5
F202 C2
F203 C1
F204 B1
F205 A1
F206 B1
F207 D5
F208 D5
F411 B2
F412 B2
J201 D2
J202 A5
J203 A1
J204 C1
J205 B5
J206 A1
L221 C3
L451 C2
Q201 C3
Q221 B3
Q251 C4
Q252 A4
Q271 C4
Q401 A3
Q425 A4
Q451 A2
Q471 B2
Q475 B2
R201 C4
R202 C4
R203 C3
R204 C3
R205 C4
R206 C4
R209 C4
R210 D3
R211 D3
R212 D3
R213 D3
R214 C3
R215 D2
R216 C3
R217 C4
R219 C4
R220 C4
R222 B4
R223 B4
R224 B4
R225 B3
R229 B3
R230 B4
R231 B4
R232 B4
R233 B4
R234 B4
R235 B4
R236 A4
R237 A3
R238 A3
R240 B3
R241 B3
R242 C4
R251 C4
R252 C4
R253 C4
R254 C5
R255 C5
R256 C5
R257 C5
R258 C5
R259 B4
R260 B5
R261 B5
R262 B5
R263 B5
R264 B4
R265 B4
R267 B4
R268 D5
R269 C4
R271 C4
R272 C3
R281 C3
R282 C4
R283 C3
R284 C3
R286 A3
R411 A3
R412 B2
R413 B2
R414 B2
R415 B2
R416 B2
R417 B2
R418 C2
R419 C2
R420 C2
R421 C2
R422 C2
R423 A4
R425 A4
R426 A2
R451 A2
R452 A2
R453 A2
R454 A2
R455 B2
R456 A2
R457 B2
R458 A2
R459 A2
R460 B2
R461 B2
R462 B2
R471 B2
R472 B1
R475 B1
R476 C3
X221 B5

NAMI 8 BOARD component side view



NAMI 8 BOARD copper side view




CD BOARD NAMI 8
PD04
DISC-DRIVE
CD94V5B1
DIODE ARRAY
MONITOR
LASER
TRACK
FOCUS
DISC
IN SW
SLED
WD01
WD02
J201
J202 S6B-PH-K-S
J203 S9B-XH-A
J204 S7B-XH-A
J205 X S3B-PH-K-S
J206 S2B-PH-K-S
Q201 TDA1300T
Q221 SAA7372
Q251 TDA7073AT
Q252 TDA7073AT
Q401 TDA1311AT
Q425 RN5RL35A
Q451 TDA1308
DOOR_SW
RES_CD7
SILD
RAB
SCL
SDA
+5V
GND
NC
D-OUT
KILL
LCH
GNDA
RCH
+8V
SCLK
WCLK
DATA
LS
GAIN
MOTO1
MOTO2
CONTROL PART
MICRO PROCESSOR INTERFACE
ERROR CORRECTOR FLAGS
AUDIO PROCESSOR
EFM DEMODULATOR
FRONTEND
DIGITAL PLL
OUTPUT STAGE
EBU INTERFACE
LEFT INPUT REGISTER
RIGHT INPUT REGISTER
LEFT OUTPUT REGISTER
RIGHT OUTPUT REGISTER
LEFT BIT SWITCHES
RIGHT BIT SWITCHES
CONTROL AND TIMING
REFERENCE SOURCE
TDA1311A
TDA1311AT
ANA AUDIO
DIG AUDIO
FOCUS SIGNAL
RADIAL SIGNAL
HF SIGNAL
SPINDL CONT
SYMBOL No.
No use
F201 ~ F204, F207: FERRITEBEAD HF50ACC453215

C201	C8
C202	C9
C203	D8
C204	C8
C205	C9
C206	C9
C207	D8
C208	C8
C210	E8
C211	E10
C212	E10
C213	E9
C214	B5
C215	A4
C217	C7
C218	C3
C219	A4
C222	C9
C223	F10
C224	F10
C225	F10
C226	F11
C230	F12
C233	B13
C234	B12
C235	B12
C236	B11
C237	B10
C238	J13
C239	J13
C240	J14
C245	I7
C249	J14
C250	J14
C251	E5
C252	E6
C253	E5
C254	E5
C255	F5
C256	F6
C257	E6
C258	E7
C261	G5
C262	G6
C263	G5
C265	H5
C266	H5
C267	G6
C268	H6
C271	D7
C401	J7
C402	J7
C411	J8
C412	I8
C413	J11
C414	I11
C451	J10
C452	I9
C453	J10
C454	I10
C455	J10
C456	I10
C459	J9
C460	J10
C461	J11
D221	B11
F201	J14
F202	J14
F203	I14
F204	I14
F207	B14
F411	J12
F412	I12
J201	B3
J202	F3
J203	B14
J204	I14
J205	F14
J206	A14
L221	B9
Q201	C5
Q221	D11
Q251	E4
Q252	G4
Q401	J7
Q425	H7
Q451	I10
R201	C8
R202	D8
R203	D8
R204	C8
R205	C8
R206	D8
R209	E9
R210	E9
R211	B5
R212	A4
R213	B4
R214	C4
R215	A5
R216	B8
R217	B8
R219	E8
R220	D9
R222	D9
R223	F10
R224	E10
R225	E11
R229	B10
R231	E11
R232	E11
R233	E11
R234	E12
R235	E12
R236	E12
R238	C12
R239	C12
R240	C12
R241	B12
R242	B11
R251	E5
R252	E5
R253	E5
R254	E6
R255	F5
R256	F5
R257	F5
R258	F6
R259	D6
R260	E6
R261	G5
R262	G5
R263	G5
R264	G6
R265	H5
R267	H6
R268	H6
R271	D7
R272	E8
R411	J8
R412	I8
R413	J11
R414	I11
R415	J12
R416	I12
R417	J12
R418	I12
R420	I13
R421	I13
R422	I13
R425	I7
R426	I7
R451	J9
R452	I9
R453	J10
R454	I10
R455	J10
R456	I9
R459	I9
R460	J9
X221	E10

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

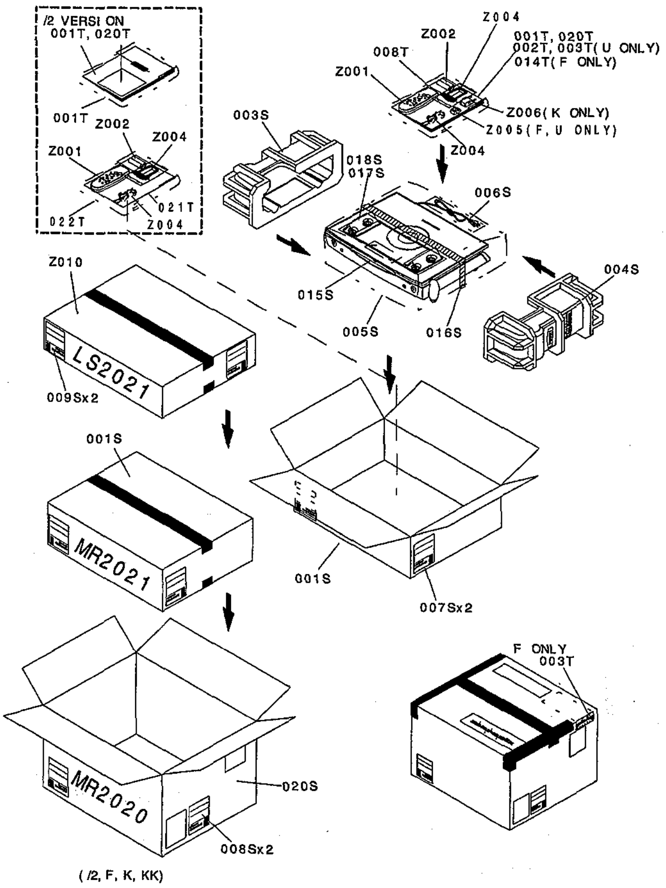
POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PD04-CD SERVO DECODER DAC CIRCUIT BOARD	
			PD04-CAPACITORS	
C201		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C202		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C203		4822 126 12495	CER. CHIP 1500pF ±10%	DK96152300
C204		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C205		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C206		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C207		4822 126 14249	CER. CHIP 560pF ±10%	DK96561300
C208		4822 126 13883	CER. CHIP 220pF ±5% CG 50V	DD95221300
C210		4822 122 33788	CER. CHIP 82pF ±5%	DD95820300
C212		4822 126 11567	CER. CHIP 0.022µF ±10% XTR	DK96223200
C213		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C214		4822 126 12516	CER. CHIP 1000pF ±10% B 50V	DK96102300
C215		4822 124 11131	ELECT CHIP 47µF 6.3V	EY47600620
C217		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C218		4822 126 11567	CER. CHIP 0.022µF ±10 % XTR	DK96223200
C219		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C221		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C222		4822 124 11131	ELECT CHIP 47µF 6.3V	EY47600620
C223		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C224		4822 126 11669	CER. CHIP 27pF ±5%	DD95270300
C225		4822 126 11669	CER. CHIP 27pF ±5%	DD95270300
C226		4822 122 33777	CER. CHIP 47pF ±5% C6 50V	DD95470300
C233		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C234		4822 124 11131	ELECT CHIP 47µF 6.3V	EY47600620
C236		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C237		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C238		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C239		4822 124 11432	ELECT CHIP 100µF 10V	EY10701020
C251		4822 126 11685	CER. CHIP 4700pF ±10%	DK96472300
C252		4822 126 11568	CER. CHIP 470pF ±10%	DK96471300
C253		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C254		4822 124 11432	ELECT CHIP 100µF 10V	EY10701020
C255		4822 126 11685	CER. CHIP 4700pF ±10%	DK96472300
C256		4822 126 11568	CER. CHIP 470pF ±10%	DK96471300
C257		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C258		4822 124 11131	ELECT CHIP 47µF 6.3V	EY47600620
C261		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C262		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C263		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C265 ∫ C268		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C271		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
C401		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C402		4822 124 11432	ELECT CHIP 100µF 10V	EY10701020
C411		4822 124 11074	ELECT CHIP 10µF 16V	EY10601620
C412		4822 124 11074	ELECT CHIP 10µF 16V	EY10601620
C413		4822 126 14249	CER. CHIP 560pF ±10%	DK96561300
C414		4822 126 14249	CER. CHIP 560pF ±10%	DK96561300
C425		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C451		4822 126 11568	CER. CHIP 470pF ±10%	DK96471300
C452		4822 126 11568	CER. CHIP 470pF ±10%	DK96471300
C453		4822 126 11759	CER. CHIP 100pF ±5%	DD95101300
C454		4822 126 11759	CER. CHIP 100pF ±5%	DD95101300
C455		4822 124 11074	ELECT CHIP 10µF 16V	EY10601620
C456		4822 124 11074	ELECT CHIP 10µF 16V	EY10601620
C459		4822 124 11226	ELECT CHIP 22µF 6.3V	EY22600620
C460		4822 126 11687	CER. CHIP 0.1µF +80%-20%	DK98104200
C461		4822 124 11226	ELECT CHIP 22µF 6.3V	EY22600620

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PD04-RESISTORS	
R201 ∫ R206		4822 051 30103	CHIP 10kΩ ±5% 1/16W	NN05103610
R209		4822 126 12339	CER. 2200pF 10%	DK96222300
R210		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R212		4822 051 30332	CHIP 3.3kΩ ±5% 1/16W	NN05332610
R213		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R214		4822 051 30104	CHIP 100kΩ ±5% 1/16W	NN05104610
R215		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R219		4822 051 30472	CHIP 4.7kΩ ±5% 1/16W	NN05472610
R222		4822 051 30224	CHIP 220kΩ ±5% 1/16W	NN05224610
R223		4822 051 30105	CHIP 1MΩ ±5% 1/16W	NN05105610
R224		4822 051 30151	CHIP 150Ω ±5% 1/16W	NN05151610
R225		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R229		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R231		4822 116 83208	CHIP 12kΩ ±5% 1/16W	NN05123610
R232		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R233		4822 116 83208	CHIP 12kΩ ±5% 1/16W	NN05123610
R235		4822 051 30273	CHIP 27kΩ ±5% 1/16W	NN05273610
R236		4822 051 30273	CHIP 27kΩ ±5% 1/16W	NN05273610
R238		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R239		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R240		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R241		4822 051 30222	CHIP 2.2kΩ ±5% 1/16W	NN05222610
R242		4822 051 30101	CHIP 100Ω ±5% 1/16W	NN05101610
R251		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R253		4822 051 30103	CHIP 10kΩ ±5% 1/16W	NN05103610
R254		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R255		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R257		4822 051 30103	CHIP 10kΩ ±5% 1/16W	NN05103610
R258		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R259		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R260		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R261		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R263		4822 051 30103	CHIP 10kΩ ±5% 1/16W	NN05103610
R264		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R265		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R267		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R268		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R271		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R272		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R411		4822 051 30332	CHIP 3.3kΩ ±5% 1/16W	NN05332610
R412		4822 051 30332	CHIP 3.3kΩ ±5% 1/16W	NN05332610
R413		4822 051 30104	CHIP 100kΩ ±5% 1/16W	NN05104610
R414		4822 051 30104	CHIP 100kΩ ±5% 1/16W	NN05104610
R415 ∫ R418		4822 051 30471	CHIP 470Ω ±5% 1/16W	NN05471610
R419			FERRITE BEADS BK1608HM102-T	FC90020120
R420			FERRITE BEADS BK1608HM102-T	FC90020120
R421		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R422		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R423		4822 116 82487	CHIP 0Ω ±5% 1/16W	NN05000610
R425		4822 117 11374	CHIP 120kΩ ±1% 1/10W	NI01124110
R426		4822 117 12024	CHIP 27kΩ ±1% 1/10W	NI01273110
R451 ∫ R456		4822 051 30223	CHIP 22kΩ ±5% 1/16W	NN05223610
R459		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610
R460		4822 051 30102	CHIP 1kΩ ±5% 1/16W	NN05102610

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PD04-SEMICONDUCTORS	
D221		4822 130 83715	CHIP DIODE 1SS301 DAN202U	HZ21005000
Q201		4822 209 16855	IC TDA1300T HF AMP AND LASER CONT	HC10172490
Q221		4822 209 91174	IC SAA7372GP SERVO	HC10132490
Q251		4822 209 16372	IC TDA7073AT DUAL BTL DRIVER	HC10165490
Q252		4822 209 16372	IC TDA7073AT DUAL BTL DRIVER	HC10165490
Q401		4822 209 32196	IC TDA1311AT CC-DAC	HC10173490
Q425		4822 209 15595	IC RN5RL35AA V-REGULATOR 3.5V	HC10021770
Q451		4822 209 33165	IC TDA1308 POWER OP AMP	HC10138490
			PD04-MISCELLANEOUS	
F201 ∫ F207		4822 157 10313	HF50ACC453215	FN31020010
L221		4822 157 53872	CHIP INDUCTANCE NL322522-100K	LU12103010
WD01		4822 320 12646	JUMPER LEAD FFC	YU15073500
X221		4822 242 11017	CRYSTAL CM309S 8.4672MHz	JX08001320

9. EXPLODED VIEW AND PARTS LIST


/2 VERSI ON
001T, 020T
001T
Z002
Z004
Z001
021T
022T
Z004
Z004
Z002
001T, 020T
002T, 003T(U ONLY)
014T(F ONLY)
008T
Z001
Z006(K ONLY)
Z005(F, U ONLY)
Z004
003S
018S
017S
006S
004S
Z010
015S
005S
016S
LS2021
009Sx2
001S
MR2021
001S
007Sx2
F ONLY
003T
MR2020
020S
008Sx2
(/2, F, K, KK)

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PACKING	
001T	F		USER GUIDE	298J851110
001T	K		USER GUIDE	298J851350
001T	KK		USER GUIDE	298J851360
001T	/2	4822 736 16729	USER GUIDE	298J851310
001T	U		USER GUIDE	298J851250
Z001		4822 219 10669	REMOTE COMMANDER RC2020MR	ZK298J0010

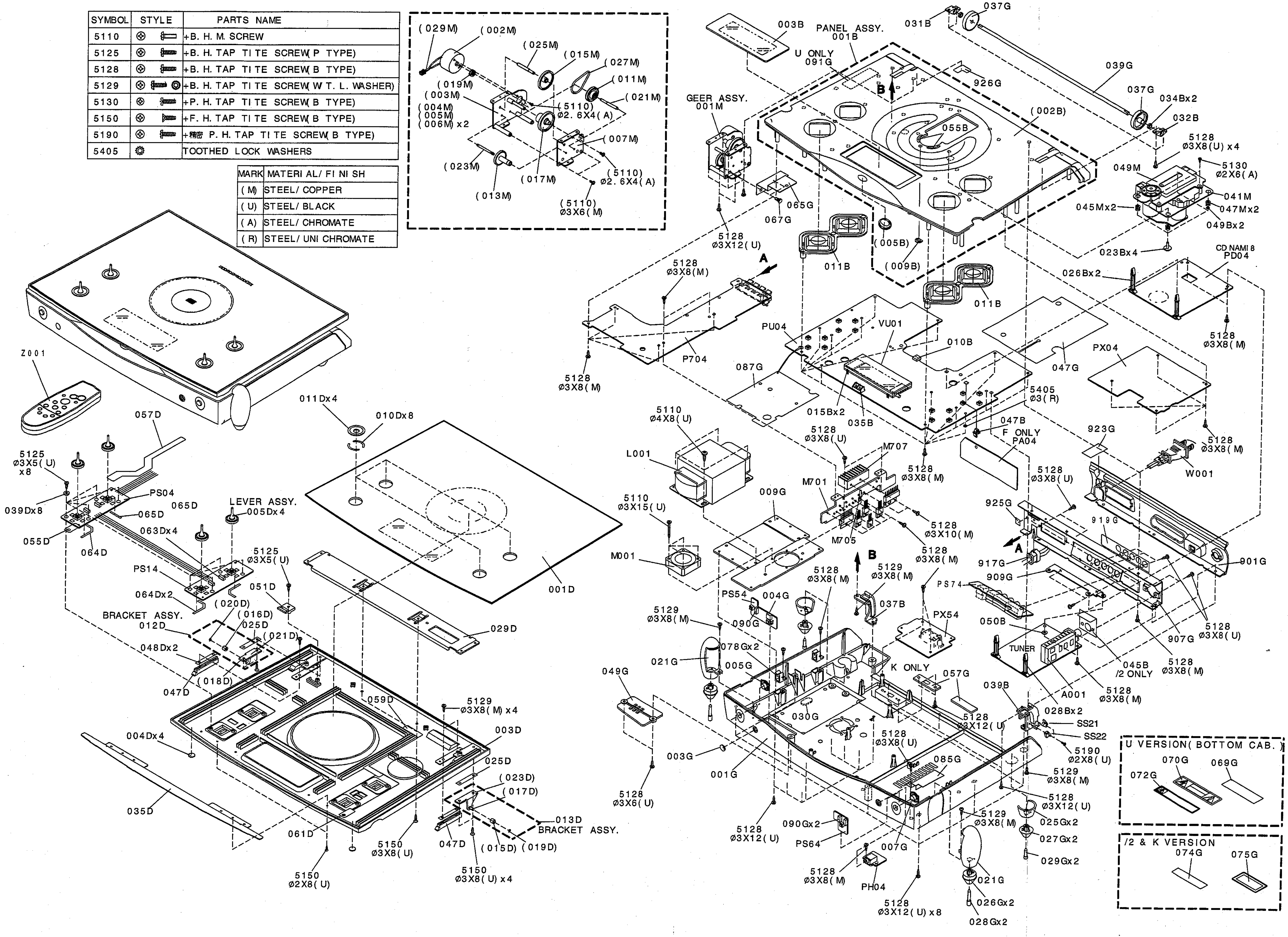
POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			NOT STANDARD SPARE PARTS	
001S	F,U		PACKING CASE MR2021	298J801010
003S	F,U		CUSHION L	298J809010
004S	F,U		CUSHION R	298J809020
020S	F		MASTER CARTON CASE MR2020	298J801030
010T			CLAMPER ASSY	298J005500
014T	F		USER'S CARD	145J865210
020T	F		LABEL FLY SHEET JAPANESE	298J861110
020T	/2,K, KK,U		LABEL FLY SHEET ENGL1S4	298J861120
021T	/2		SHEET FOR REMOCON ETC	298J107040
055T			SCHEMATIC DIAGRAM	298J493A00
Z002	F		BATTERY UM-4NEPH/2S	ZF24302000
Z003			AM LOOP ANTENNA LA-700HB	LA00055020
Z004	F	4822 303 30314	FM FEEDER ANTENNA	ZA02000070
Z004	/2,K, KK		FM ANTENNA 931222R	ZA02800020
Z004	U	4822 303 30314	FM FEEDER ANTENNA	ZA02000070
Z005	F,U	4822 264 30265	PLUG ANT ADAPTER FM	YP90000310
Z006	K	4822 265 10092	JACK AC ADAPTER S-I6116 PLRTY	YJ04001240
Z007	F,K,KK		SPEAKER BOX SPK SYSTEM	AS20100180
Z007	U		SPEAKER BOX SPK SYSTEM	AS20100190
Z008			BADGE MARANTZ	354H251230
Z010	F,		PACKING CASE FOR SPEAKER LS2021	298J801020

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
001B	F,K,KK, U		FRONT PANEL ASSY	298J248510
001B	/2	4822 466 12193	FRONT PANEL ASSY	298J248500
002B	F,K,KK, U		FRONT PANEL	298J248020
002B	/2		FRONT PANEL	298J248010
003B		4822 450 10615	WINDOW FL	298J158040
005B			LENS SENSOR	298J355020
009B			LENS DSC SENS	298J355030
011B		4822 410 12282	BUTTON TOP	298J270010
023B			SCREW FOR CD MECHA	183J010010
031B		4822 404 10992	SUSTAINER L	298J106020
032B		4822 404 10991	SUSTAINER R	298J106030
034B		4822 520 10859	SUSTAINER BEARING	298J106060
037B		4822 528 11315	CAM L	298J054010
039B		4822 528 11316	CAM R	298J054020
049B			WASHER FOR CD MECHA REAR	298J012010
052B			COVER FOR GEAR ASSY	298J053020
055B			BUFFER FOR CD	298J056070
001D	F,K,KK, U		WINDOW	298J158030
001D	/2	4822 466 10616	WINDOW	298J158010
003D		4822 466 12194	LID	298J257010
004D			BUFFER FOR LID	298J056020
005D		4822 402 11277	LEVER ASSY	298J354500
010D			STICKER ADHESIVE FOR 011D	298J122010
011D		4822 462 11164	CAP FOR WINDOW	298J067030
012D		4822 402 11278	BRACKET ROLLER ASSY L	298J160520
013D		4822 402 11279	BRACKET ROLLER ASSY R	298J160530
015D			ROLLER LID	298J358010
016D			ROLLER LID	298J358010
019D		4822 530 70122	RG RING E RING	64000200R0
020D		4822 530 70122	RG RING E RING	64000200R0
047D		4822 522 10751	GEAR FOR LID	298J058020
067D			BUFFER FOR SHIELD	345S056030
001G		4822 442 01753	CASE BOTTOM	298J064010
003G		4822 381 12069	LENS IR	298J355010
005G		4822 410 12283	BUTTON FRONT STANDBY	298J270020
007G		4822 410 12282	BUTTON FRONT OPEN/CLOSE	298J270030
021G		4822 462 11165	LEG FRONT	298J057010
025G		4822 462 11166	LEG REAR	298J057020
026G		4822 462 11167	LEG FOR FRONT	298J057050
027G		4822 462 11168	LEG FOR REAR	298J057030
028G		4822 535 10629	PIN FOR FRONT LEG	298J254020
029G		4822 535 10631	PIN FOR REAR LEG	298J254010
030G			LEG SUB	298J057040
037G		4822 522 10752	GEAR E	298J058010
049G		4822 442 01754	LID BOTTOM	298J257020
901G	F		REAR PANEL	298J250020
901G	K		REAR PANEL	298J250040
901G	KK		REAR PANEL	298J250050
901G	/2		REAR PANEL	298J250010
901G	U		REAR PANEL	298J250030
917G		4822 532 60948	BUSHING AC MAINS	450H259010
001M		4822 522 10753	MECHANISM GEAR ASSY	298J304510
002M		4822 361 30368	D.C MOTOR	MM00460020
011M		4822 522 10754	GEAR A	298J058100
013M		4822 522 10755	GEAR B	298J058110
015M		4822 522 10756	GEAR C	298J058120
017M		4822 522 10757	GEAR D	298J058130
019M			PULLEY	298J262100
021M			SHAFT A	298J112100
023M			SHAFT B	298J112110
027M		4822 358 10273	BELT	298J264100
041M		4822 691 10781	MECHANISM CD MECHA ASSY	298J304500
045M		4822 529 10428	DAMPER SUSPENSION RUBBER A	298J130010
047M		4822 529 10429	DAMPER SUSPENSION RUBBER B	298J130020
049M			COVER CD MECHA	298J053010
FH01	/2		FERRITE CORE ZCAT1325-0530A CLAMP	FC50200020
⚠ L001	F		MAINS TRANSF. AC100V	TS17206010
⚠ L001	K		MAINS TRANSF. AC110-220V	TS17206040
⚠ L001	KK		MAINS TRANSF. AC220V	TS17206050
⚠ L001	/2	4822 146 11124	MAINS TRANSF. AC230V	TS17206030
⚠ L001	U		MAINS TRANSF. AC120V	TS17206020
M001		4822 361 11159	D.C MOTOR BRUSHLESS FAN KD1204PFB2-8	MM01200290
M705			LEAF SPRING	298J116010
SS21		4822 271 30768	MINI SW. DOOR CLOSE	SM01011530
SS22		4822 271 30768	MINI SW. DOOR OPEN	SM01011530
WU03		4822 320 12647	JUMPER LEAD 8P FFC JS02-JS11	YU08238500
WU04		4822 320 12648	JUMPER LEAD 13P FFC JU10-JS01	YU13268500
⚠ W001	F	4822 321 11359	A.C MAINS CORD	YC01800800
⚠ W001	K,U		A.C MAINS CORD AC250V 10A	YC01800880
⚠ W001	KK		A.C MAINS CORD 3A 250V	YC02000820
⚠ W001	/2	4822 321 11343	A.C MAINS CORD	YC01800790

SYMBOL	STYLE	PARTS NAME
5110	⊕	+B. H. M. SCREW
5125	⊕	+B. H. TAP TITE SCREW(P TYPE)
5128	⊕	+B. H. TAP TITE SCREW(B TYPE)
5129	⊕	+B. H. TAP TITE SCREW(W T. L. WASHER)
5130	⊕	+P. H. TAP TITE SCREW(B TYPE)
5150	⊕	+F. H. TAP TITE SCREW(B TYPE)
5190	⊕	+精密 P. H. TAP TITE SCREW(B TYPE)
5405	⚙	TOOTHED LOCK WASHERS

MARK	MATERIAL/FINISH
(M)	STEEL/COPPER
(U)	STEEL/BLACK
(A)	STEEL/CHROMATE
(R)	STEEL/UNI CHROMATE


(029M)
(002M)
(025M)
(015M)
(027M)
(011M)
(021M)
(019M)
(003M)
(004M)
(005M)
(006M) x2
(5110) Ø2.6X4(A)
(007M)
(023M)
(017M)
(5110) Ø2.6X4(A)
(013M)
(5110) Ø3X6(M)
Z001
057D
5125 Ø3X5(U) x8
PS04
039Dx8
065D
065D
055D
064D
LEVER ASSY. 005Dx4
063Dx4
5125 Ø3X5(U)
PS14
064Dx2
011Dx4
010Dx8
001D
051D
(020D)
BRACKET ASSY. 012D
(016D)
025D
(021D)
048Dx2
(018D)
047D
029D
059D
5129 Ø3X8(M) x4
003D
004Dx4
025D
(023D)
(017D)
013D BRACKET ASSY.
035D
061D
5150 Ø3X8(U)
047D
(015D)
(019D)
5150 Ø3X8(U) x4
5150 Ø2X8(U)
003B
PANEL ASSY. 001B
U ONLY 091G
031B
037G
039G
037G
034Bx2
032B
GEER ASSY. 001M
B
926G
(002B)
055B
5128 Ø3X8(U) x4
5130 Ø2X6(A)
049M
041M
047Mx2
045Mx2
049Bx2
065G
067G
5128 Ø3X12(U)
(005B)
(009B)
011B
011B
023Bx4
CD NAMI 8 PD04
026Bx2
5128 Ø3X8(M)
A
P704
5128 Ø3X8(M)
PU04
VU01
010B
087G
047G
PX04
5128 Ø3X8(M)
015Bx2
035B
5405 Ø3(R)
047B F ONLY PA04
923G
5128 Ø3X8(M)
W001
5110 Ø4X8(U)
5128 Ø3X8(U)
M707
L001
M701
5128 Ø3X8(M)
5128 Ø3X8(U)
009G
5110 Ø3X15(U)
925G
919G
5128 Ø3X10(M)
M705
M001
B
5128 Ø3X8(M)
A
917G
901G
5128 Ø3X8(M)
5129 Ø3X8(M)
909G
PS74
PS54
004G
037B
5129 Ø3X8(M)
090G
050B
PX54
TUNER
907G
5128 Ø3X8(U)
021G
078Gx2
005G
K ONLY
057G
045B /2 ONLY
5128 Ø3X8(M)
049G
A001
5128 Ø3X8(M)
039B
028Bx2
5128 Ø3X12(U)
SS21
SS22
030G
5128 Ø3X8(U)
5190 Ø2X8(U)
085G
003G
001G
5129 Ø3X8(M)
5128 Ø3X12(U)
5128 Ø3X6(U)
090Gx2
5129 Ø3X8(M)
025Gx2
027Gx2
029Gx2
5128 Ø3X12(U)
PS64
007G
5128 Ø3X8(M)
PH04
021G
026Gx2
028Gx2
5128 Ø3X12(U) x8
U VERSION(BOTTOM CAB.)
070G
069G
072G
/2 & K VERSION
074G
075G

10. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTORS

R＊＊＊: 1) GD05 ××× 140, Carbon film fixed resistor, ±5% 1/4W
R＊＊＊: 2) GD05 ××× 160, Carbon film fixed resistor, ±5% 1/6W
① —— Resistance value

Examples ;
①Resistance value

0.1 Ω.... 001	10 Ω 100	1 kΩ 102	100 kΩ.... 104
0.5 Ω.... 005	18 Ω 180	2.7 kΩ 272	680 kΩ.... 684
1 Ω.... 010	100 Ω 101	10 kΩ 103	1 MΩ.... 105
6.8 Ω.... 068	390 Ω 391	22 kΩ 223	4.7 MΩ.... 475

Note : Please distinguish 1/4W from 1/6W by the shape of parts used actually.

CAPACITORS

C＊＊＊: CERAMIC CAP.
3) DD1 ×××× 370, Ceramic capacitor
Disc type
Temp.coeff.P350 ~ N1000, 50V
② ③
③ —— Capacity value
② —— Tolerance

Examples ;
② Tolerance (Capacity deviation)
±0.25 pF 0
±0.5 pF 1
±5% 5

＊ Tolerance of COMMON PARTS handled here are as follows :
0.5 pF ~ 5 pF .... ±0.25 pF
6 pF ~ 10 pF .... ±0.5 pF
12 pF ~ 560 pF .... ±5%

③ Capacity value

0.5 pF 005	3 pF 030	100 pF 101
1 pF 010	10 pF 100	220 pF 221
1.5 pF 015	47 pF 470	560 pF 561

C＊＊＊ : CERAMIC CAP.
4) DK16 ××× 300, High dielectric constant ceramic capacitor
Disc type
Temp.chara. 2B4, 50V
④ —— Capacity value

Examples ;
④ Capacity value

100 pF 101	1000 pF 102	10000 pF 103
470 pF 471	2200 pF 222	

C＊＊＊ : 5) ELECTROLY CAP. (≠), 6) FILM CAP. (╪)
5) EA ×××××× 10, Electrolytic capacitor
One-way lead type, Tolerance ±20%
⑤ ⑥
⑥ —— Working voltage
⑤ —— Capacity value

Examples ;
⑤ Capacity value

0.1 µF 104	4.7 µF 475	100 µF 107
0.33 µF 334	10 µF 106	330 µF 337
1 µF 105	22 µF 226	1100 µF 118
		2200 µF 228

⑥ Working voltage

6.3V 006	25V 025
10V 010	35V 035
16V 016	50V 050

6) DF15 ××× 350 → Plastic film capacitor
DF15 ××× 310 ┘ One-way type, Mylar ±5% 50V
DF16 ××× 310 → Plastic film capacitor
One-way type, Mylar ±10% 50V
⑦ —— Capacity value

Examples ;
⑦ Capacity value

0.001 µF (1000 pF) 102	0.1 µF 104
0.0018 µF 182	0.56 µF 564
0.01 µF 103	1 µF 105
0.015 µF 153	

NOTE : 1) The above CODES (R＊＊＊, R＊＊＊ , C＊＊＊ , C＊＊＊ and C ＊＊＊) are omitted on the schematic diagram in some case.
2) On the occasion, be confirmed the common parts on the parts list.
3) Refer to "Common Parts List" for the other common parts (**RI05, DD4, DK4**).

NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows;

1. KOA Corporation

Part No. (MJI)		Type No. (KOA)	Description
NH05 ××× 140	→	RF25S ×××× ΩJ	(±5% 1/4W)
NH05 ××× 120	→	RF50S ×××× ΩJ	(±5% 1/2W)
NH85 ××× 110	→	RF73B2A ×××× ΩJ	(±5% 1/10W)
NH95 ××× 140	→	RF73B2E ×××× ΩJ	(±5% 1/4W)

└ ＊ Resistance value └ Resistance value (0.1 Ω – 10 kΩ)

2. Matsushita Electronic Components Co., Ltd

Part No. (MJI)		Type No. (MEC)	Description
NF05 ××× 140 RF05 ××× 140	→	ERD-2FCJ ×××	(±5% 1/4W)
NF02 ××× 140 RF02 ××× 140	→	ERD-2FCG ×××	(±2% 1/4W)

└ ＊ Resistance value └ ＊ Resistance value

Examples ;
＊ Resistance value

0.1 Ω.... 001	10 Ω 100	1 kΩ 102	100 kΩ.... 104
0.5 Ω.... 005	18 Ω 180	2.7 kΩ 272	680 kΩ.... 684
1 Ω.... 010	100 Ω 101	10 kΩ 103	1 MΩ.... 105
6.8 Ω.... 068	390 Ω 391	22 kΩ 223	4.7 MΩ.... 475

ABBREVIATION AND MARKS

ANT.	ANTENNA	BATT.	BATTERY
CAP.	CAPACITOR	CER.	CERAMIC
CONN.	CONNECTING	DIG.	DIGITAL
HP	HEADPHONE	MIC.	MICROPHONE
µ-PRO	MICROPROCESSOR	REC.	RECORDING
RES.	RESISTOR	SPK	SPEAKER
SW	SWITCH	TRANSF.	TRANSFORMER
TRIM.	TRIMMING	TRS.	TRAMSISTOR
VAR.	VARIABLE	X'TAL	CRYSTAL

NOTE ON SAFETY :

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ⚠ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

安全上の注意 :

⚠ がついている部品は、安全上重要な部品です。必ず指定されている部品番号の部品を使用して下さい。

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, ＊＊:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			P704-MOTOR DRIVE MAIN AMP CIRCUIT BOARD	
			P704-CAPACITORS	
CD01		4822 122 30103	CER. 0.022µF +80%-20% 50V	DK18223310
CD02		4822 122 30103	CER. 0.022µF +80%-20% 50V	DK18223310
C701		4822 124 22273	ELECT. 0.47µF 50V	OA47405020
C702		4822 124 22273	ELECT. 0.47µF 50V	OA47405020
C721		4822 124 90357	ELECT. 2.2µF ±20% 50V RA-2	OA22505020
C722		4822 124 22273	ELECT. 0.47µF ±20% 50V	OA47405020
C723		4822 122 31205	CER. 47pF ±5% CH 50V	DD15470300
C724		4822 124 22274	ELECT. 4.7µF ±20% 50V RA-2	OA47505020
C725		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
C726		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
C727		4822 124 90362	ELECT. 22µF 50V ±20% RA2	OA22605020
C728		4822 126 12496	CER. 0.01µF +80%-20% 50V	DD38103010
C801 ~ C804		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
C805		4822 122 30103	CER. 0.022µF +80%-20% 50V	DK18223310
C806		4822 124 42367	ELECT 3300µF 35V RE3	EA33803570
C807		4822 124 90367	ELECT. 2200µF 25V	OA22802520
C808		4822 124 22695	ELECT. 2200µF 35V	OA22803520
C809		4822 124 80582	ELECT. 4700µF 16V	OA47801620
C810		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
C811		4822 124 12399	ELECT 3300µF 6.3V RE3	EA33800670
C812		4822 124 41543	ELECT. 1µF 50V	OA10505020
C814		4822 124 90355	ELECT. 100µF 50V	OA10705020
C815		4822 124 90362	ELECT. 22µF 50V	OA22605020
C816		4822 124 90362	ELECT. 22µF 50V	OA22605020
C818		4822 122 40617	CER. 0.1 +80%-20% 50V	DD38104010
C819		4822 124 90354	ELECT. 100µF 16V	OA10701620
C820		4822 124 90354	ELECT. 100µF 16V	OA10701620
C821		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
C851		4822 124 90354	ELECT. 100µF 16V	OA10701620
C852		4822 124 90352	ELECT. 10µF 16V	OA10601620
			P704-CAPACITORS (COMMON)	
C＊＊＊			PLASTIC FILM CAPACITOR ±5% 50V : C703-C710 C813	
			P704-RESISTORS	
R723		4822 050 21022	1kΩ ±5% 1/4W	GG05102140
R724		4822 050 21022	1kΩ ±5% 1/4W	GG05102140
⚠ R804		4822 111 90967	FUSE 4.7Ω 5%1/4W	NF05047140
R809		4822 050 21021	100Ω ±5% 1/4W	GG05101140
R810		4822 050 21021	100Ω ±5% 1/4W	GG05101140
R825		4822 116 82444	0.33Ω ±10% 2W	GO10332020
R851		4822 052 10479	47Ω ±5% 1/4W	GG05470140
R853		4822 116 80257	6.19kΩ 1% 1/6W	GM11661910
R857		4822 117 13643	THERMISTOR ERTD2ZHJ103T	HH00033020
			P704-RESISTORS (COMMON)	
R＊＊＊			CARBON FILM FIXED RES. ±5% 1/6W : R701-R714 R721 R722 R725-R736 R801-R803 R805-R808 R811 R818-R824 R826-R828 R852 R854 -R856 R858 RD01-RD04	
			P704-SEMICONDUCTORS	
DD01		4822 130 10667	ZENER DIODE 4.7V	HD30471000
D701 ~ D704		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D705		4822 130 80322	ZENER DIODE 15V	HD31501000
D706		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
D707		4822 130 80132	ZENER DIODE 3.9V	HD30391000
D708		4822 130 80838	ZENER DIODE 18V	HD31801000
D709		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D710		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
D711		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
D801		4822 130 83438	DIODE D5SB-10 200V 5A	HE20016290
D802		4822 130 33057	DIODE S2VB20	HE20011290
D803 ~ D806		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D808		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D809		4822 130 80272	ZENER DIODE 7.5V	HD30751000
D810		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
D811		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
D812		4822 130 81659	ZENER DIODE 27V	HD32701000
D813		4822 130 10667	ZENER DIODE 4.7V	HD30471000
D851		4822 130 80321	ZENER DIODE 10V	HD31001000
D852		4822 130 83142	ZENER DIODE 6.2V	HD30621000
D853		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
QD01		4822 209 83803	IC LB1641 MOTOR DRIVER	HC10148030
Q701		4822 209 16224	IC AN7125 POWER AMP	HC10169020
Q702		4822 130 11588	TRS. 2SA1307 O Y	HT113072A0
Q703		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
Q704		4822 130 42433	TRS. 2SA933S R S	HT109332B0
Q705		4822 130 42433	TRS. 2SA933S R S	HT109332B0
Q706		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
Q707		4822 130 42433	TRS. 2SA933S R S	HT109332B0
Q708		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
Q801		4822 209 17378	IC PQ30RV2	HC31930320
Q802		4822 130 61417	TRS. 2SB1240 TV-2 Q R	HT212402A0
Q803		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
Q805		4822 209 17379	IC PQ12RF2 REQ.12V 2A	HC31912320
Q806		4822 209 14623	IC NJM7808FA 8V 1A	HC38908090
Q807		4822 130 42433	TRS. 2SA933 R S	HT109332B0
Q851		4822 130 42292	TRS. 2SC2120 O	HT321201A0
Q852		4822 130 42433	TRS. 2SA933S R S	HT109332B0
Q853		4822 130 43313	TRS. 2SC3312 R S	HT333122A0
			P704-MISCELLANEOUS	
⚠ F803	F,U		FUSE 1.6A 125V	FS20160220
⚠ F803	/2,K,KK	4822 071 51602	FUSE T1.6A 250V	FS20160200
⚠ F804	F,U		FUSE 4.0A 125V UL CSA	FS20400220
⚠ F804	/2,K,KK	4822 071 54002	FUSE 4.0A 250V VDE SEMKO	FS20400200
⚠ F805	F,U		FUSE T 1.25A 125V UL CSA	FS20125220
⚠ F805	/2,K,KK	4822 071 51252	FUSE T1.25A 250V	FS20125200
⚠ F806	F,U		FUSE 500mA 125V UL CSA	FS20050220
⚠ F806	/2,K,KK	4822 071 55001	FUSE T0.5A 250V	FS20050200
J702		4822 290 60752	TERMINAL 4 PIN PUSH	YT03040330
L701 ~ L704		4822 157 63085	AIR COIL SPK CHOCK COIL HORIZONTAL TYPE	ML08010010
L707	/2	4822 157 11848	ZJYS51R5-2P	FN21000060
L708	/2	4822 157 11848	ZJYS51R5-2P	FN21000060
			P804-POWER SUPPLY CIRCUIT BOARD	
LB01		4822 157 70419	LF-4D-102	FN01020020
RB01	U		2.2MΩ ±10% 1/2W FOR UL	RC10225820
SB01	K		SLIDE SW. SLIDE 110V-220V	SS02021670

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PA04-AM-STEREO CIRCUIT BOARD [F Version]	
			PA04-CAPACITORS	
CA02	F	4822 124 21894	ELECT 10µF 16V	EJ10601610
CA03	F	4822 124 21894	ELECT 10µF 16V	EJ10601610
CA04	F	4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CA05	F	4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CA11	F	4822 124 21894	ELECT 10µF 16V	EJ10601610
CA13	F	4822 124 23053	ELECT 1µF 50V	EJ10505010
CA14	F	4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CA15	F	4822 122 31205	CER. 47pF ±5% CH 50V BLK	DD15470300
CA16	F	4822 124 23056	ELECT 47µF 16V	EJ47601610
CA20	F	4822 124 23056	ELECT 47µF 16V	EJ47601610
CA21	F	4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CA22	F	4822 124 40786	ELECT 2.2µF 50V	EJ22505010
CA23	F	4822 124 40786	ELECT 2.2µF 50V	EJ22505010
CA24	F	4822 124 23053	ELECT 1µF 50V	EJ10505010
			PA04-CAPACITORS (COMMON)	
C***			HIGH DIELECTRIC CONSTANT CER. CAPACITOR ±10% 50V : CA01 CA17-CA19	
C***			PLASTIC FILM CAPACITOR ±5% 50V : CA06-CA10 CA12	
			PA04-RESISTOR	
▲ RA08	F		FUSE82 Ω G 1/4W	NF02820140
			PA04-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RES. ±5% 1/6W : RA01-RA07	
			PA04-SEMICONDUCTORS	
DA01	F	4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
DA02	F	4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
DA03	F	4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
QA01	F		IC MC13022P AM STEREO	HC10078170
QA02	F		IC 74HC4053 C-MOS	HC705300B0
QA03	F	4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QA04	F	4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
			PB04-MISCELLANEOUS	
LA01	F		I.F.T. COIL A7NRES-T1370Y 450kHz	LI71010120
XA01	F		SERAMVIB. CSA3.6MGF103	FQ03604020
			PH04-HEAD PHONE JACK CIRCUIT BOARD	
			PH04-CAPACITORS	
CH15		4822 126 12496	CER. 0.01µF +80%-20% 50V	DD38103010
CH16		4822 126 12496	CER. 0.01µF +80%-20% 50V	DD38103010
CH17		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
			PB04-MISCELLANEOUS	
JH01		4822 265 11577	JACK HEAD PHONE HS10914-01-040	YJ01004500

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
			PS04-SW ASSY CIRCUIT BOARD	
SS01		4822 276 14088	TACT SW. ALPS-SKQUAA	SP01013280
SS02		4822 276 14088	TACT SW. ALPS-SKQUAA	SP01013280
			PS14-SW ASSY CIRCUIT BOARD	
SS11		4822 276 14088	TACT SW.ALPS-SKQUAA	SP01013280
SS12		4822 276 14088	TACT SW.ALPS-SKQUAA	SP01013280
			PS54-IR ASSY C IRCUIT BOARD	
CS51		4822 126 10935	ELECT 100µF 6.3V	EJ10700610
QS51		4822 130 11494	PHOTO UNIT RPM6936-V4 IR SENSOR	HW10004210
SS51		4822 276 20508	PUSH SW. EVQ11L05R	SP01013370
			PS64-DOOR SW ASSY CIRCUIT BOARD	
SS61		4822 276 20508	PUSH SW. EVQ11L05R	SP01013370
			PU04-µ-COM ASSY CIRCUIT BOARD	
			PU04-CAPACITORS	
CF22		4822 126 11558	CER. 0.1µF +80%-20% 50V	DA17104110
CF49	/2	4822 126 10408	CER. 220pF ±10% B 50V	DA16221110
CF50	/2	4822 126 10408	CER. 220pF ±10% B 50V	DA16221110
CF51	/2		CER. 1500pF ±20% X 50V	DA17152110
CF53		4822 124 21894	ELECT 10µF 16V	EJ10601610
CF54		4822 124 21894	ELECT 10µF 16V	EJ10601610
CF55		4822 126 10362	CER. 22pF ±5% SL 50V	DA15220110
CF56		4822 126 10362	CER. 22pF ±5% SL 50V	DA15220110
CF57		4822 124 21894	ELECT 10µF 16V	EJ10601610
CF58		4822 124 21894	ELECT 10µF 16V	EJ10601610
CF59		4822 124 23056	ELECT 47µF 16V	EJ47601610
CF60		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CF61		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CU01		4822 126 10513	CER. 47pF ±5% SL 50V	DA15470110
CU02		4822 126 10513	CER. 47pF ±5% SL 50V	DA15470110
CU03		4822 126 10513	CER. 47pF ±5% SL 50V	DA15470110
CU04		4822 126 10364	CER. 100pF ±10% B 50V	DA16101110
CU05	/2	4822 126 10513	CER. 47pF ±5% SL 50V	DA15470110
CU08	/2	4822 122 31237	CER. 82pF ±5% CH 50V	DD15820300
CU09	/2	4822 122 31205	CER. 47pF ±5% CH 50V	DD15470300
CU10	/2	4822 126 12496	CER. 0.01µF DC50V +80 -20%	DD38103010
CU11	/2	4822 122 40617	CER. 0.1µF DC50V +80 -20%	DD38104010
CU12	/2	4822 126 11071	CER. 330pF ±10% B 50V	DA16331110
CU13	/2	4822 124 40786	ELECT 2.2µF 50V	EJ22505010
CU14	/2	4822 126 10409	CER. 560pF ±10% B 50V	DA16561110
CU17		4822 124 23295	BIG ELECT 0.022µF 5V	EX22300510
CU18		4822 126 10935	ELECT 100µF 6.3V	EJ10700610
CU19		4822 122 40586	CER. 0.01µF ±20% 50V	DA17103110
CU20		4822 126 10935	ELECT 100µF 6.3V	EJ10700610
CU21		4822 126 12867	ELECT. 1000µF 6.3V	OA108006Q0
CU24		4822 122 40589	CER. 0.047µF ±10% F 50V	DA17473110
CU27		4822 122 31823	CER. 15pF ±5% CH 50V	DD15150300
CU28		4822 122 31823	CER. 15pF ±5% CH 50V	DD15150300
CU29		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
CU30		4822 124 23053	ELECT 1µF 50V	EJ10505010
CU31		4822 124 23053	ELECT 1µF 50V	EJ10505010
CU32		4822 126 10408	CER. 220pF ±10% B 50V	DA16221110
CU33		4822 122 33795	CER. 4700pF ±20% X 50V	DA17472110
CU34		4822 126 10935	ELECT 100µF 6.3V	EJ10700610
CU35		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CU36		4822 124 22726	ELECT 4.7µF 35V	EJ47503510
CU37		4822 124 22726	ELECT 4.7µF 35V	EJ47503510
CU38		4822 122 40586	CER. 0.01µF ±20% Y 50V	DA17103110
CU39		4822 122 40617	CER. 0.1µF +80%-20% 50V	DD38104010
CU41		4822 126 10364	CER. 100pF ±10% B 50V	DA16101110
CU42		4822 126 10364	CER. 100pF ±10% B 50V	DA16101110

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POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
CU43		4822 126 10364	CER. 100pF ±10% B 50V	DA16101110
CU44		4822 122 40586	CER. 0.01μF ±20% Y 50V	DA17103110
CU47		4822 122 40586	CER. 0.01μF ±20% Y 50V	DA17103110
CU48	/2		CER. 1500pF ±20% X 50V	DA17152110
CU53		4822 126 12867	ELECT. 1000μF 6.3V	OA108006Q0
CU54		4822 122 40617	CER. 0.1μF +80 -20% 50V DC	DD38104010
CU55	/2	4822 126 12496	CER. 0.01μF +80 -20% DC50V	DD38103010
CU56	/2	4822 126 12496	CER. 0.01μF +80 -20% DC50V	DD38103010
CU57		4822 122 40617	CER. 0.1μF +80%-20% 50V	DD38104010
CU58		4822 122 40617	CER. 0.1μF +80%-20% 50V	DD38104010
CU59		4822 124 40786	ELECT 2.2μF 50V	EJ22505010
CU61 ∫ CU64		4822 126 10408	CER. 220P ±10% 50V	DA16221110
CU65		4822 122 40617	CER. 0.1μF +80%-20% 50V	DD38104010
			PU04-CAPACITORS (COMMON)	
C***			PLASTIC FILM CAPACITOR ±5% 50V : [CU45 CU46 : KK U]	
			PU04-RESISTORS	
RU55		4822 050 23308	3.3MΩ ±5% 1/6W	GD05335160
RU57		4822 050 23308	3.3MΩ ±5% 1/6W	GD05335160
RU64		4822 117 10158	1Ω 1/4W GG	GG05010140
RU65		4822 117 10158	1Ω 1/4W GG	GG05010140
RU67		4822 052 10101	100Ω ±5% 1/6W	GG05101160
RU88		4822 050 23308	3.3MΩ ±5% 1/6W	GD05335160
			PU04-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RES. ±5% 1/6W : RF01-RF16 RF19-RF26 RF28-RF32 RF51-RF62 RT61-RT64 RU01-RU04 [RU05 RU07-RU12 : /2] RU13-RU37 RU41-RU47 RU49 RU56 RU58-RU61 [RU62 : /2 U] [RU63 : /2 K KK] RU69 RU71-RU74 RU76-RU87 RU89-RU93 RU98 RU99	
			PU04-SEMICONDUCTORS	
DU01		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU02		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU03		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU05		4822 130 82421	DIODE 1D3 1A 200V	HD20002710
DU06		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
DU07		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
DU08		4822 130 32362	DIODE 1SS176 MA165 1SS254 30V 0.1A	HD20002000
DU09		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU10		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU12		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU13		4822 130 80837	DIODE HSS81TH 150V 150mA	HD20027010
DU14		4822 130 80837	DIODE HSS81TD 150V 150mA	HD20027010
DU15		4822 130 11585	L.E.D. SIM-22ST FOR DOOR	HI20001210
QF51		4822 209 83631	IC NJM4558D-D	HC10008090
QU01		4822 130 11586	PHOTO UNIT RPM-22PB PHOTO-DOOR	HW10006210
QU02		4822 130 91368	PHOTO UNIT NJL5165KL DISC SENSOR	HW10004090
QU03		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU04		4822 130 61892	TRS. 2SD2144S U V	HT421442A0
QU05	/2	4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
QU06	/2	4822 130 61227	DIG.TRS. DTA114ES UN4111 10K 10K	BA10001000
QU07	/2	4822 209 17372	IC SAA6588 RDS DECODER	HC10174490
QU08		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU09		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU10		4822 209 17376	MICROPROCESSOR TMP87CS71F MR2020 E3E5	HU298JT00F
QU14		4822 130 42682	DIG.TRS. DTA144ES UN4113 47K 47K	BA10002000
QU16		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QU17		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU18		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QU19		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC	HT30001000
QU20		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC.	HT10001000
QU21		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QU22		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC.	HT30001000
QU23		4822 130 43313	TRS. 2SC3312 2SC1740SLN	HT30002000
QU24		4822 130 43313	TRS. 2SC3312 2SC1740SLN	HT30002000
QU25		4822 130 43313	TRS. 2SC3312 2SC1740SLN	HT30002000
QU26		4822 130 42715	TRS. 2SA1048 2SA933S 2SA1267 ETC	HT10001000
QU29		4822 130 41947	TRS. 2SC2458 2SC1740S 2SC3199 ETC	HT30001000
			PU04-MISCELLANEOUS	
LU01	/2	4822 242 73843	EMI FILTER 0.022μF	FM12223010
LU02	/2	4822 242 73843	EMI FILTER 0.022μF	FM12223010
SU01 ∫ SU16		4822 276 20508	PUSH SW. EVQ11L05R	SP01013370
VU01		4822 135 00271	DISPLAY UNIT FL 11-BT-164GK	HQ30806410
XU01		4822 242 72236	CRYSTAL DT-38 32.768kHz	XO001001T2
XU02		4822 242 72066	SERAMVIB. CST8.0MHz MT	FQ08004010
XU03	/2	4822 242 10857	CRYSTAL 4.332MHz AT-49	JX04003260
			PX04-SOUND CONT. H.P AMP CIRCUIT BOARD	
			PX04-CAPACITORS	
CE09		4822 124 22703	ELECT. 0.22μF ±20% 50V	OA22405020
CE10		4822 124 22703	ELECT. 0.22μF ±20% 50V	OA22405020
CE11		4822 124 22273	ELECT. 0.47μF ±20% 50V	OA47405020
CE12		4822 124 22273	ELECT. 0.47μF ±20% 50V	OA47405020
CE17		4822 122 40617	CER. 0.1μF +80 -20% 50V DC	DD38104010
CE18		4822 124 41539	ELECT. 47μF ±20% 16V RA-2	OA47601620
CE19		4822 124 41539	ELECT. 47μF ±20% 16V RA-2	OA47601620
CE20		4822 124 90354	ELECT. 100μF 16V	OA10701620
CE21		4822 124 90354	ELECT. 100μF 16V	OA10701620
CE27		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE28		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE31		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE32		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE35		4822 124 41543	ELECT. 1μF ±20% 50V RA-2	OA10505020
CE36		4822 124 41543	ELECT. 1μF ±20% 50V RA-2	OA10505020
CE37		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE38		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE41		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE42		4822 121 42327	FILM 470pF ±5% 50V	DF15471350
CE45		4822 122 30043	CER. 0.01μF +80%-20% 50V	DK18103310
CE46		4822 122 40617	CER. 0.1μF +80%-20% 50V	DD38104010

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
CH07		5322 122 32143	CER. 22pF ±5% 50V	DD15220300
CH08		5322 122 32143	CER. 22pF ±5% 50V	DD15220300
CH09		4822 124 41539	ELECT. 47µF ±20% 16V RA-2	OA47601620
CH10		4822 124 41539	ELECT. 47µF ±20% 16V RA-2	OA47601620
CH11		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CH12		4822 124 41539	ELECT. 47µF ±20% 16V RA-2	OA47601620
CH18		4822 124 41539	ELECT. 47µF 16V	OA47601620
CX01		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX02		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX05		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX08		4822 124 41539	ELECT. 47µF 16V RA-2	OA47601620
CX09		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX10		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX11		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX12		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX13		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX14		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX17		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX18		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX19		4822 124 22273	ELECT. 0.47µF ±20% 50V	OA47405020
CX20		4822 124 22273	ELECT. 0.47µF ±20% 50V	OA47405020
CX21		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX22		4822 124 90357	ELECT. 2.2µF 50V	OA22505020
CX23		5322 122 32143	CER. 22pF ±5% CH 50V BLK	DD15220300
CX24		5322 122 32143	CER. 22pF ±5% CH 50V BLK	DD15220300
CX25		4822 124 90357	ELECT. 2.2µF ±20% 50V RA-2	OA22505020
CX26		4822 124 90357	ELECT. 2.2µF ±20% 50V RA-2	OA22505020
CX27		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX28		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX29		4822 124 90352	ELECT. 10µF 16V	OA10601620
CX70		4822 124 11574	ELECT 1000µF 16V RE3	EA10801670
CX71		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
CX72		4822 124 41539	ELECT. 47µF 16V	OA47601620
CX73		4822 122 30043	CER. 0.01µF +80%-20% 50V	DK18103310
			PX04-CAPACITORS (COMMON)	
C***			HIGH DIELECTRIC CONSTANT CER. CAPACITOR ±10% 50V : CE33 CE34 CE39 CE40 CH05 CH06 CH13 CH14 CX03 CX16 CX81 CX82	
C***			PLASTIC FILM CAPACITOR ±5% 50V : CE01-CE08 CE15 CD16 CE25 CE26 CE29 CE30 CE43 CE44 CE47 CH01-CH04 CX15 CX31 CX32	
			PX04-RESISTOR	
RX72		4822 111 90967	FUSE 4.7Ω 1/4W	NF05047140
			PX04-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RES. ±5% 1/6W : RE01-RE38 RH03-RH16 RN01-RN04 RX01-RX08 RX11-RX26 RX31-RX48 RX70 RX71	
			PX04-SEMICONDUCTORS	
QE01		4822 209 17382	IC TEA6321 DSC	HC10170490
QE02		4822 130 61892	TRS. 2SD2144S U V	HT421442A0
QE03		4822 209 83631	IC NJM4558D-D	HC10008090
QE04		4822 209 83631	IC NJM4558D-D	HC10008090
QH01		4822 209 82362	IC NJM4556D	HC10016090
QN01 ~ QN04		4822 130 43818	TRS. 2SC2878 A BRANK	HT328782A0
QX01		4822 209 83631	IC NJM4558D-D	HC10008090
QX02		4822 209 83631	IC NJM4558D-D	HC10008090

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
QX03		4822 209 83631	IC NJM4558D-D	HC10008090
QX04		4822 209 17381	IC PQ05RF2 REQ.5V 2A	HC31905320
QX05 ~ QX08		4822 130 43818	TRS. 2SC2878 A BRANK	HT328782A0
QX09		4822 209 83631	IC NJM4558DD	HC10008090
QX70		4822 130 61892	TRS. 2SD2144S U V	HT421442A0
			PX04-MISCELLANEOUS	
LH01		4822 157 62898	CHOKE COIL 180µH J	LC11843800
LH03		4822 157 62898	CHOKE COIL 180µH J	LC11843800
LH05		4822 157 62898	CHOKE COIL 180µH J	LC11843800
LX01		4822 157 60122	CHOKE COIL 4.7µH J	LC14723800
			PX54-AUX-IN MONI-OUT REMOTE CIRCUIT BOARD	
			PX54-CAPACITORS (COMMON)	
C***			HIGH DIELECTRIC CONSTANT CER. CAPACITOR ±10% 50V : CX51-CX55	
			PX54-RESISTORS (COMMON)	
R***			CARBON FILM FIXED RES. ±5% 1/6W : RX51-RX54	
			PX54-MISCELLANEOUS	
JX51		4822 265 11573	TERMINAL MONI-OUT AUX-IN	YT02041230
JX52		4822 265 10684	TERMINAL SUB WOOFER RCA-1PIN	YT02011020
LX51 ~ LX55		4822 157 62908	CHOKE COIL 2.2µH J	LC12223800

Service Manual

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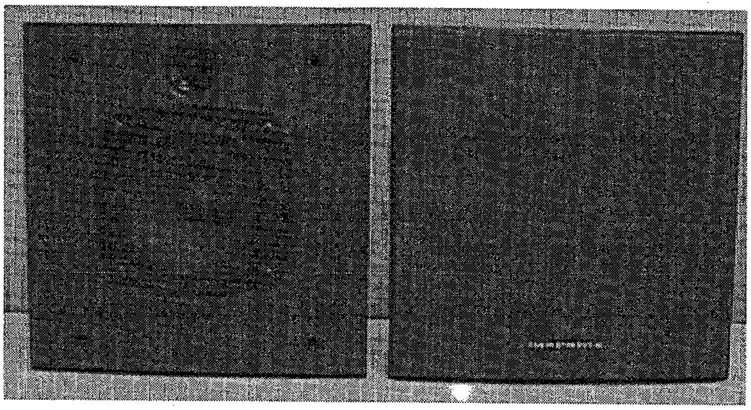
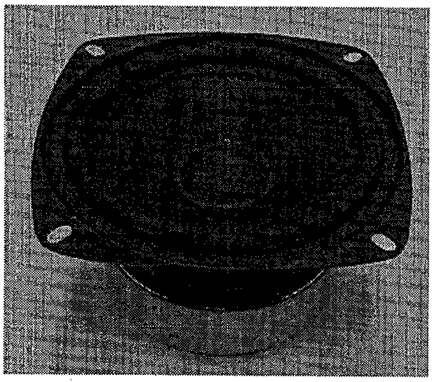
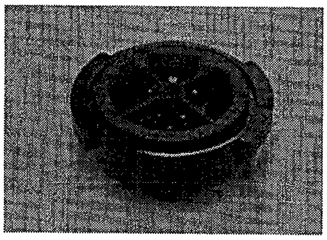
LS2021 F,K,KK,U
Speaker System





LS01



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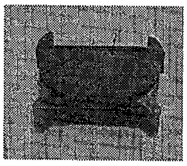

LS03

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, /X : EUROPE)

POS. NO	VERS. COLOR	PART NO. (FOR PCS)	DESCRIPTION	PART NO. (MJI)
LS01		4822 240 10354	LOUDSPEAKER, TWEETER	*QK000030R
LS02		4822 240 10355	LOUDSPEAKER, WOOFER	*QK000040R
LS03		4822 265 11569	SPEAKER TERMINAL	*YT001430R

Please use this service manual with referring to the user guide (D.F.U.) without fail.
修理の際は、必ず取扱説明書を準備し操作方法を確認の上作業を行ってください。

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